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# STRATFORD/AVON RIVER ENVIRONMENTAL MANAGEMENT PROJECT

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# STRATFORD/AVON RIVER ENVIRONMENTAL MANAGEMENT PROJECT

## WATER QUALITY MONITORING OF THE AVON RIVER - 1980, 1981

Technical Report No. S-3

Prepared on Behalf of the
Stratford-Avon River
Environmental Management
Project By:

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Southwest Region
August, 1982

# PREFACE

This report is one of a series of technical reports resulting from work undertaken as part of the Stratford-Avon River Environmental Management Project (S.A.R.E.M.P.).

This two-year Project was initiated in April 1980, at the request of the City of Stratford. The S.A.R.E.M.P. is funded entirely by the Ontario Ministry of the Environment. The purpose of the project is to provide a comprehensive water quality management strategy for the Avon River basin. In order to accomplish this considerable investigation, monitoring and analysis has taken place. The outcome of these investigations and field demonstrations will be documented strategy outlining the program and implementation mechanisms most effective in resolving the water quality problems now facing residents of the basin. The project includes assessment of urban, rural and in-stream management mechanisms for improving water quality.

This report results directly from the aforementioned investigations. It is meant to be technical in nature and not a statement of policy or program direction. Observations and conclusions are those of the author and do not necessarily reflect the attitudes or philosophy of all agencies and individuals affiliated with the Project. In certain cases the results presented are interim in nature and should not be taken as definitive until such time as additiional support data is collected.

Reference to equipment, brand names or supplies in this publication is not to be interpreted as an endorsement of that particular product or supplier.

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# ABSTRACT

A two-year Stratford-Avon River Environmental Management Project included sampling conducted throughout the Avon River basin (tributary to the Thames River) to document the existing water quality. Most of the nineteen sampling locations were sampled approximately 30 times throughout the study period for various chemical and bacteriological parameters. The information collected revealed contamination of the river from both rural and urban sources. The highest levels of contamination occured during high river flow periods and were associated with erosion and poor farming practices.

The Stratford sewage treatment plant also produced its poorest effluent during spring runoff and storm events. The rural areas contributed phosphorus, ammonia, nitrates, aluminum and bacteria to the Avon River, while the parameters of major concern resulting from sewage treatment were phosphorus, ammonia and bacteria.

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# 1. INTRODUCTION

The Stratford-Avon River Environmental Management Project (SAREMP) was established to further study and determine the best ways of implementing recommendations proposed in the 1979 Ministry report "Impact of Waste Inputs on the Quality of the Avon River". This present report summarizes the routine monitoring data that were collected throughout the basin during the two years of study.

Regular monitoring data were collected from May, 1980 to August, 1981 by staff and students of Southwestern Region of the Ministry of the Environment. Althogether 19 stations were sampled throughout the basin in an attempt to assess existing conditions and the relative effects of rural and urban inputs on the water quality of the Avon River. Fifteen stations were sampled during most of 1980, and an additional four (for a total of nineteeen) during late 1980 and 1981. Three continuously recording dissolved oxygen/temperature meters were installed to document fluctuations in dissolved oxygen during the summer months.

# 2. METHODOLOGY

The chemical and bacteriological samples were collected approximately bi-weekly in the first year and once a month, with increased frequency during the spring freshet, in the second year. Samples were collected using standard Ministry of the Environment techniques and containers.

The continuously recording dissolved oxygen/temperature meters were EIL Model 1510 with Rustrak Model 388 recorders. These meters were calibrated approximately weekly using a Model 54 ARC YSI oxygen meter that was itself calibrated by the wet Winkler method.

## 3. RESULTS

The sampling locations used during the project are shown in Figure 1. Table 1 presents the average 1980-81 concentration for the common parameters, while the actual data are shown in the Appendix. Figures 2 through 4 graphically present the 1980-81 minimum daily dissolved oxygen values from the continuous recorders at stations 1, 8 and 12, respectively. Some of the more variable parameters are shown graphically in Figures 5 through 13.

Spatial and temporal patterns of dissolved oxygen, total phosphorus, filtered reactive phosphorus, ammonia, nitrates, chlorides and bacteriological parameters are discusssd in more detail below.

### 3.1 Dissolved Oxygen

As shown in Table 1, the dissolved oxygen fluctuates widely at all stations. THese fluctuations are most pronounced in the lower reaches (stations #8 - 13) where concentrations can exceed 200% saturation. The minimum concentrations shown in Table 1 represent only the daytime minimums when samples were taken.

Figures 2 through 4 present the minimum daily dissolved oxygen concentrations at the continuously recording stations (station #1, 8 and 12). Nightime dissolved oxygen levels decreased to at least 1.1 mg/1 at all three stations. This Ministry's dissolved oxygen criterion for warm water biota states that the concentration should not be less than 47% saturation (temperature dependent).

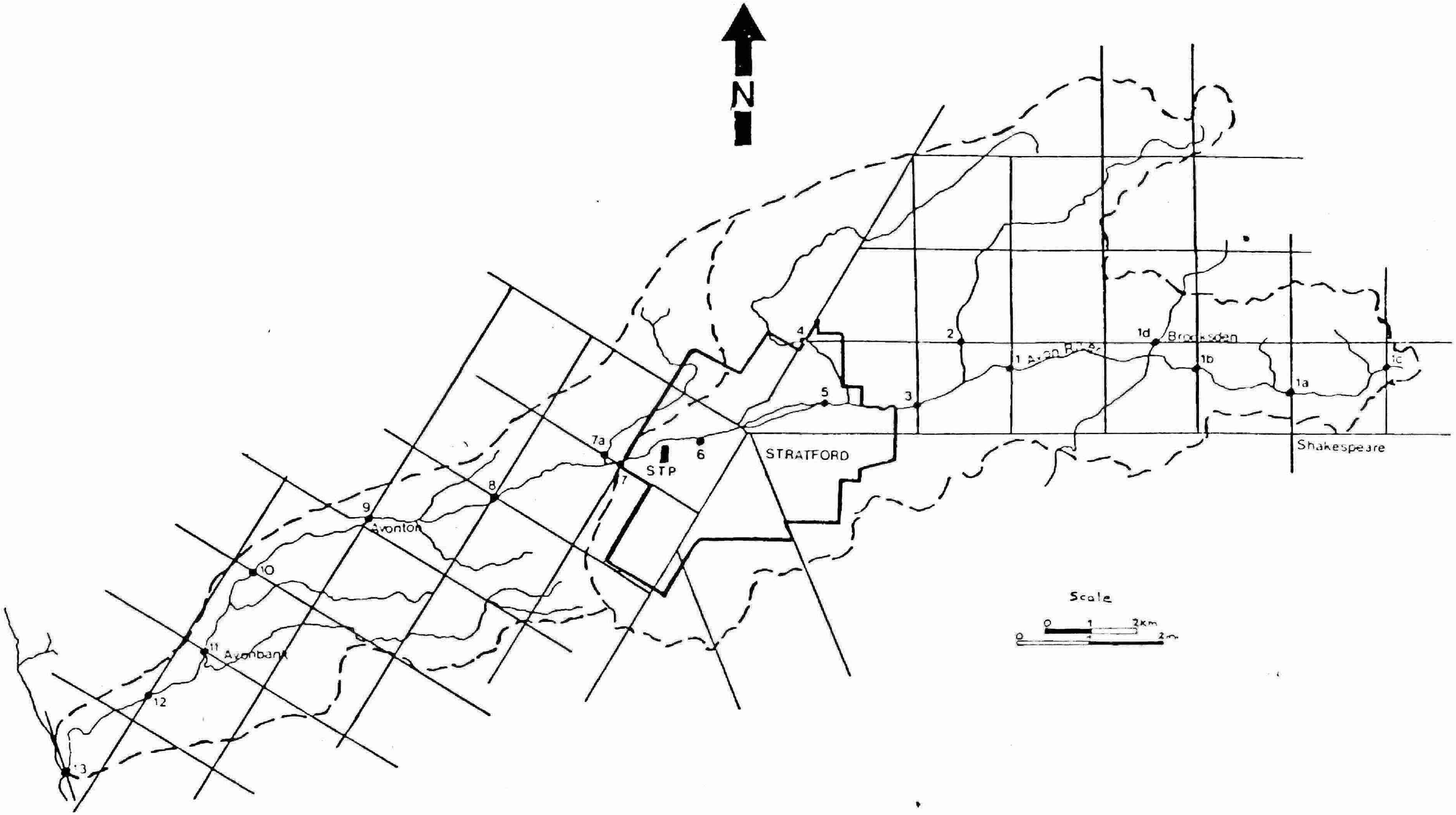

Figure 1. Sampling locations on the Avon River 1980-81.

Table 1. Concentrations at the sampling locations on the Avon River for select parameters (mg/l unless otherwise noted).

| Station | Dissolved Oxygen (daytime) | | | $BOD_5$ | | | Phosphorus as P | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Total | | | |
| | Ave | Max | Min | Ave | Max | Min | Ave | Max | Min | Sol |
| #1 | 11.6 | 17.0 | 6.8 | 1.7 | 5.4 | 0.3 | 0.077 | 0.350 | 0.024 | 0.023 |
| #1A | 11.4 | 17.9 | 1.9 | 1.6 | 3.2 | 0.6 | 0.091 | 0.255 | 0.044 | 0.013 |
| #1B | 15.6 | -- | -- | 2.0 | -- | -- | 0.104 | -- | -- | 0.037 |
| #1C | 13.3 | 17.6 | 7.2 | 1.9 | 8.2 | 0.3 | 0.091 | 0.390 | 0.014 | 0.015 |
| #1D | 12.9 | G20.0 | 5.8 | 1.4 | 3.4 | 0.2 | 0.086 | 0.245 | 0.034 | 0.035 |
| #2 | 12.7 | 17.2 | 8.5 | 1.8 | 7.8 | 0.2 | 0.110 | 0.440 | 0.047 | 0.049 |
| #3 | 11.3 | 14.4 | 6.8 | 1.6 | 3.8 | 0.3 | 0.078 | 0.290 | 0.030 | 0.024 |
| #4 | 10.3 | 17.4 | 6.4 | 1.6 | 3.2 | 0.2 | 0.090 | 0.182 | 0.017 | 0.037 |
| #5 | 10.9 | 15.0 | 5.7 | 2.6 | 9.4 | 0.4 | 0.105 | 0.280 | 0.034 | 0.037 |
| #6 | 10.2 | 14.7 | 4.6 | 3.0 | 7.6 | 0.6 | 0.097 | 0.222 | 0.034 | 0.019 |
| STP | 9.7 | 13.3 | 5.8 | 6.28 | 40.0 | 0.2 | 0.702 | 3.70 | 0.044 | 0.327 |
| #7 | 10.9 | 16.6 | 5.8 | 4.5 | 11.6 | 0.4 | 0.281 | 1.35 | 0.072 | 0.145 |
| #7A | 12.0 | 15.0 | 7.4 | 1.9 | G15.0 | 0.1 | 0.156 | 1.55 | 0.030 | 0.097 |
| #8 | 14.3 | G20.0 | 8.1 | 2.9 | 6.6 | 0.6 | 0.190 | .880 | 0.060 | 0.109 |
| #9 | 13.4 | G20.0 | 7.8 | 2.3 | 8.0 | 0.7 | 0.163 | .670 | .038 | .089 |
| #10 | 14.3 | G20.0 | 7.8 | 2.3 | 6.8 | 0.4 | 0.150 | .500 | .045 | .075 |
| #11 | 13.9 | G20.0 | 7.8 | 2.0 | 5.4 | 0.5 | 0.127 | .450 | .030 | .063 |
| #12 | 12.7 | G20.0 | 7.7 | 1.9 | 5.8 | 0.5 | 0.115 | .375 | .028 | .059 |
| #13 | 13.3 | G20.0 | 7.9 | 1.0 | 6.6 | 0.5 | 0.126 | .360 | .013 | .066 |

Table 1. (continued)

| Station | Nitrogen as N | | | | | | Bacteria/100 ml | | PA | Susp. Solids | pH | Cond umhos/cm$^3$ | Chloride as Cl$^-$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Kjel | FA | | | NO$_2$ | NO$_3$ | FC | FS | | | | | |
| | | Ave | Max | Min | | | | | | | | | |
| #1 | 0.939 | 0.173 | 1.1 | L.005 | 0.049 | 4.3 | 417.0 | 352.7 | 4.4 | 15.9 | 7.92 | 585.7 | 15.8 |
| #1A | 1.21 | 0.071 | 0.230 | .005 | 0.047 | 6.1 | 116.2 | 334.2 | 4.4 | 21.6 | 7.87 | 526.7 | 14.3 |
| #1B | 1.34 | 0.215 | -- | -- | 0.035 | 14.4 | 600.0 | 600.0 | L4.0 | 32.1 | 7.67 | 660.0 | 25.0 |
| #1C | 1.12 | 0.049 | 0.205 | .005 | 0.035 | 11.3 | 35.1 | 145.6 | 4.2 | 45.8 | 8.01 | 555.4 | 13.6 |
| #1D | 0.846 | 0.077 | 0.355 | .010 | 0.039 | 3.1 | 191.4 | 180.8 | 5.3 | 14.0 | 7.95 | 524.0 | 8.6 |
| #2 | 0.906 | 0.113 | 1.18 | .010 | 0.043 | 3.5 | 481.7 | 583.2 | 7.3 | 20.2 | 8.1 | 567.0 | 11.3 |
| #3 | 0.877 | 0.117 | 0.330 | L.005 | 0.049 | 4.0 | 634.8 | 390.2 | 5.8 | 25.5 | 7.9 | 588.7 | 14.6 |
| #4 | 1.24 | 0.120 | 0.805 | .005 | 0.026 | 3.33 | 510.0 | 471.8 | 8.4 | 9.4 | 8.0 | 616 | 29.8 |
| #5 | 1.30 | 0.314 | 1.40 | .005 | 0.044 | 3.60 | 305.5 | 189.9 | 8.8 | 13.8 | 7.9 | 673.9 | 34.6 |
| #6 | 1.16 | 0.145 | 0.660 | L.005 | 0.036 | 3.20 | 227.0 | 215.6 | 8.6 | 23.9 | 8.0 | 680.3 | 34.9 |
| STP | 4.25 | 3.15 | 17.6 | .035 | 0.509 | 9.42 | 2028.0 | 1240.0 | 9.9 | 7.1 | 7.6 | 1613.0 | 220.0 |
| #7 | 1.99 | 0.754 | 4.70 | L.005 | 0.226 | 6.16 | 1121.0 | 466.9 | 10.7 | 22.6 | 7.9 | 898.0 | 90.0 |
| #7A | 1.04 | 0.138 | 2.35 | 0.005 | 0.038 | 5.93 | 601.0 | 887.3 | 6.6 | 9.2 | 8.0 | 732.9 | 51.4 |
| #8 | 1.5 | 0.468 | 1.45 | 0.010 | 1.18 | 5.68 | 576.7 | 301.9 | 6.3 | 15.1 | 8.2 | 906.1 | 80.8 |
| #9 | 1.4 | 0.329 | 1.05 | .005 | 1.55 | 5.50 | 366.3 | 154.7 | 7.9 | 14.3 | 8.2 | 909.2 | 80.8 |
| #10 | 1.2 | 0.257 | 1.08 | 0.005 | 0.157 | 5.22 | 335.5 | 155.5 | 6.5 | 13.6 | 8.3 | 884.7 | 79.9 |
| #11 | 1.14 | 0.222 | 1.0 | 0.014 | 0.94 | 4.95 | 249.5 | 110.7 | 6.0 | 12.4 | 8.3 | 876.9 | 76.1 |
| #12 | 1.11 | 0.213 | 1.0 | 0.005 | 0.072 | 5.2 | 181.1 | 170.0 | 5.7 | 11.4 | 8.4 | 821.4 | 69.0 |
| #13 | 1.28 | 0.319 | 1.70 | L.005 | 0.369 | 4.6 | 220.3 | 174.3 | 5.7 | 13.2 | 8.4 | 860.0 | 85.6 |

G = Greater Than

L = Less Than

* value represent upper limits for means since several observations are not given precisely but as upper limits.

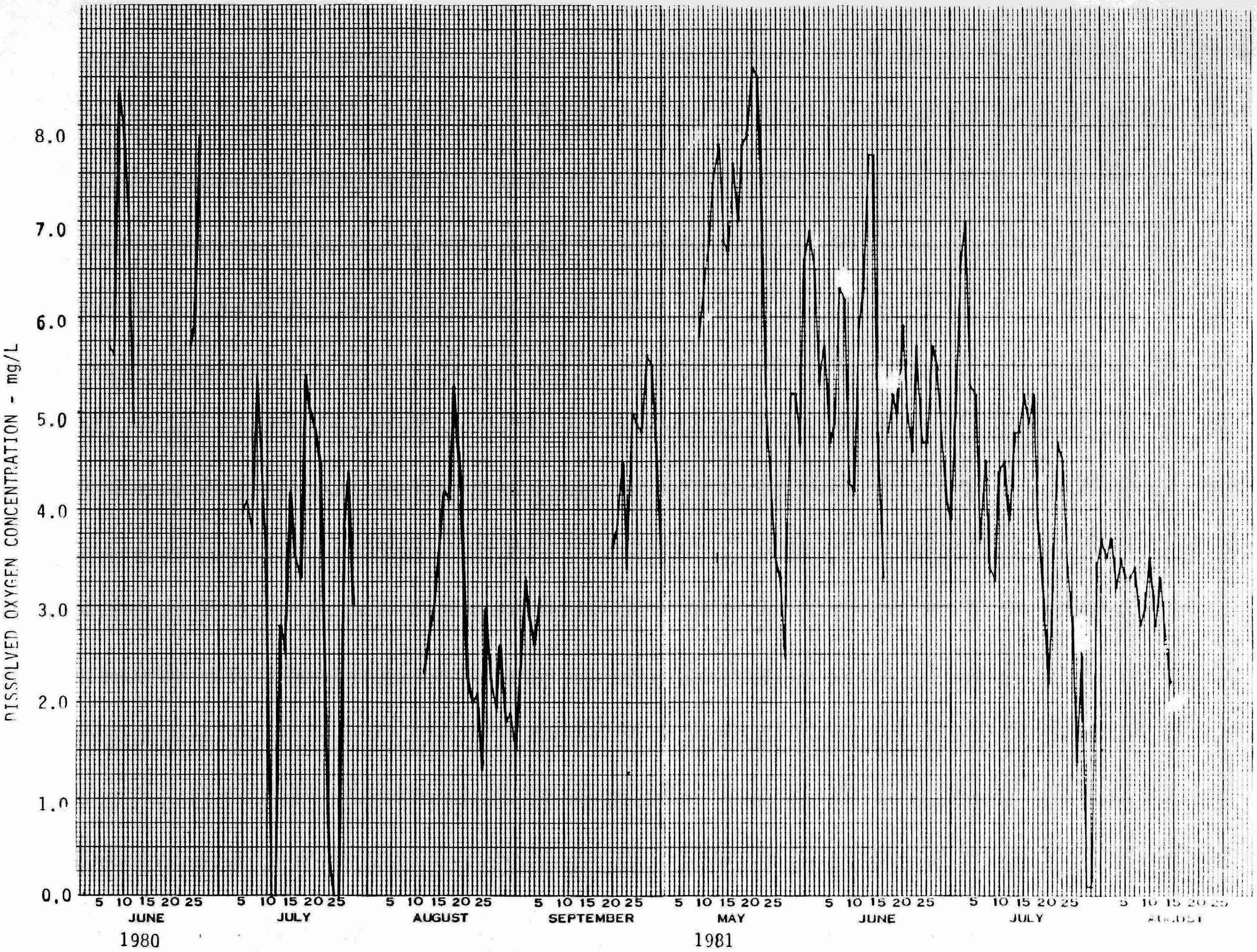

FIGURE 2: MINIMUM DAILY DISSOLVED OXYGEN LEVELS RECORDED AT STATION #1, JUNE 1980 - AUGUST 1981

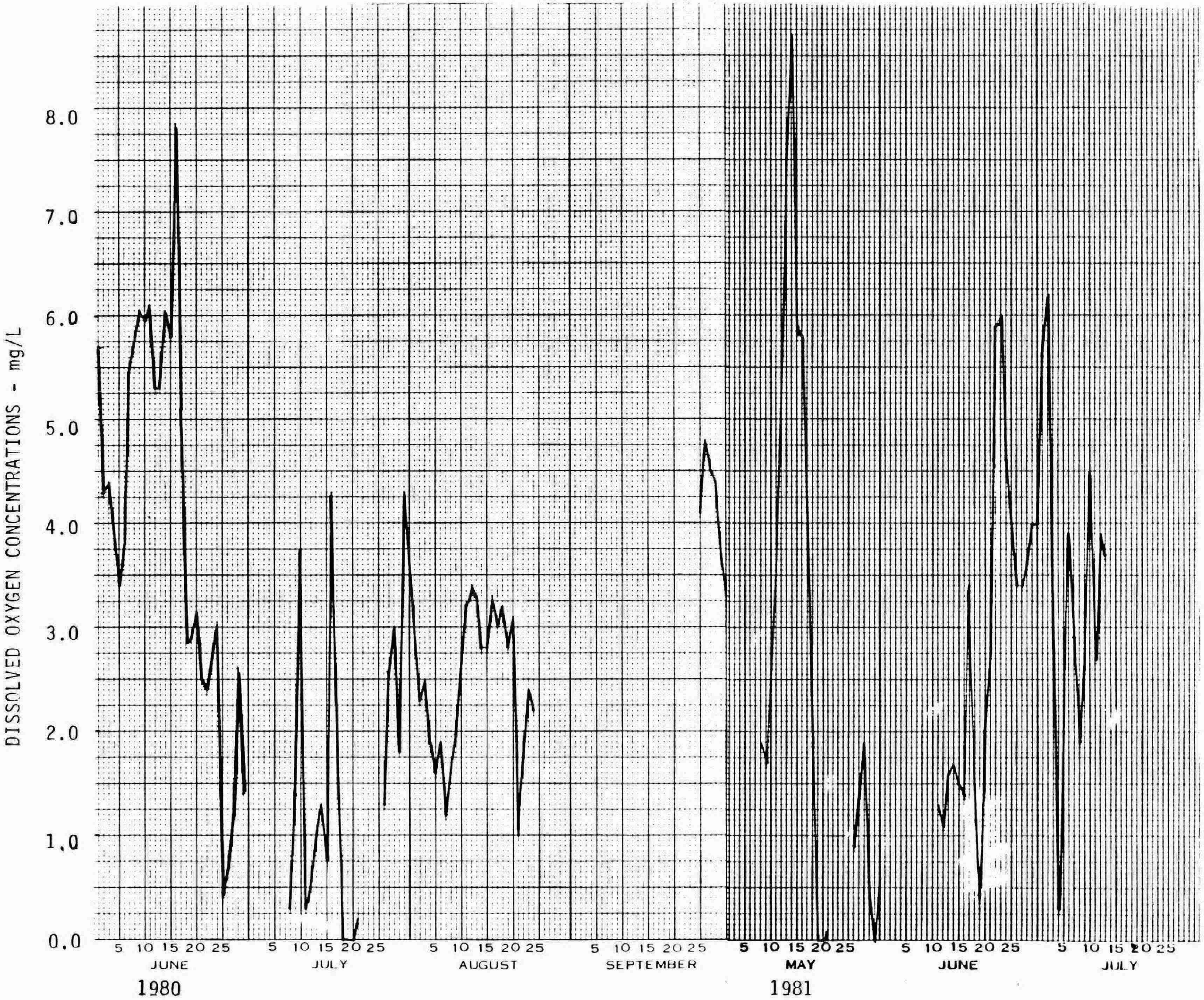

FIGURE 3: MINIMUM DAILY DISSOLVED OXYGEN LEVELS RECORDED AT STATION #8, JUNE 1980 - AUGUST 1981

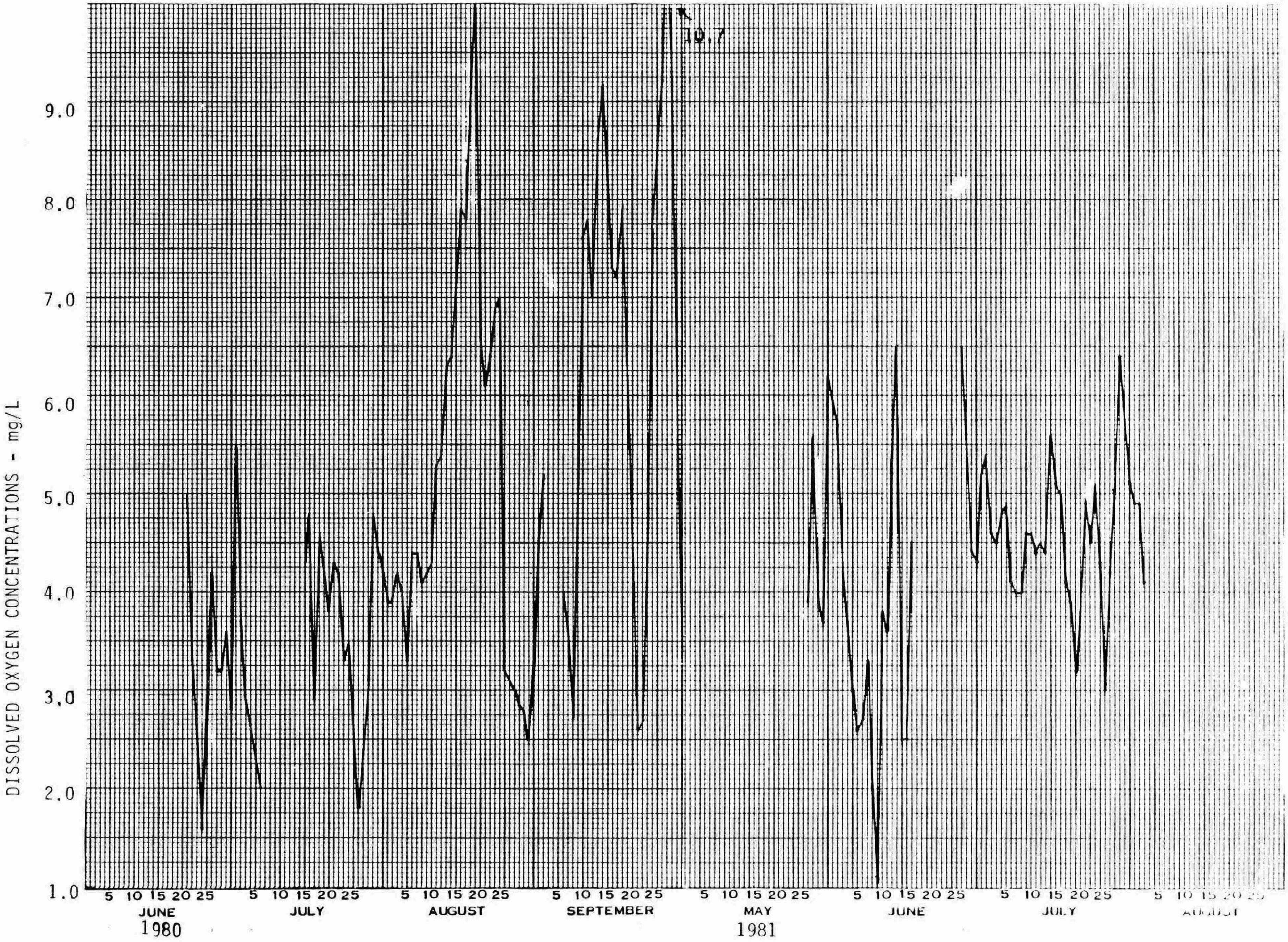

FIGURE 4: MINIMUM DAILY DISSOLVED OXYGEN LEVELS RECORDED AT STATION #12, JUNE 1980 - AUGUST 1981

## 3.2 Total Phosphorus

The average total phosphorus concentration at the farthest upstream station (1C) was 0.091 mg/l. This concentration decreased to 0.077 at station #1 and that level was maintained to the outskirts of the City of Stratford (Station 5). The tributary stations 1D, 2 and 4-exhibited somewhat higher levels, similar to those observed at the upstream station. Within the city, however, average concentrations of total phosphorus in the river water increased to the 0.1 mg/l range.

The discharge from the Stratford sewage treatment plant (STP) entering the river downstream of the city, contributed an average of 0.702 mg/l total phosphorus, with maximum and minimum values of 3.70 and 0.04 mg/l, respectively. Downstream of the STP, at Station #7, stream concentrations were higher than ustream of the plant, averaging 0.281 mg/l. Station #7A, another tributary station, contributed an average concentration of 0.156 mg/l. At the remaining downstream stations, the concentration of total phosphorus decreased with distance to the mouth. At the last station (station #13) the phosphorus concentrations averaged 0.126 mg/l. Figure 5 presents the above data in a graphical format.

Figures 6 and 7 provide plots of the percentage of time total phosphorus measurements exceeded certain concentrations at stations 1 and 10. At station 1, 14% of the samples collected were within the Ministry's Objective of 0.030 mg/l, 52% were 0.040 mg/l or less, 62% were 0.050 mg/l or less, and 72% were 0.060 mg/l or less. Downstream from the sewage treatment plant at station 10, none of the samples were within the Objective of 0.030 mg/l, none were 0.040 mg/l or less, 4% were 0.050 mg/l or less, and 15% were 0.060 mg/l or less.

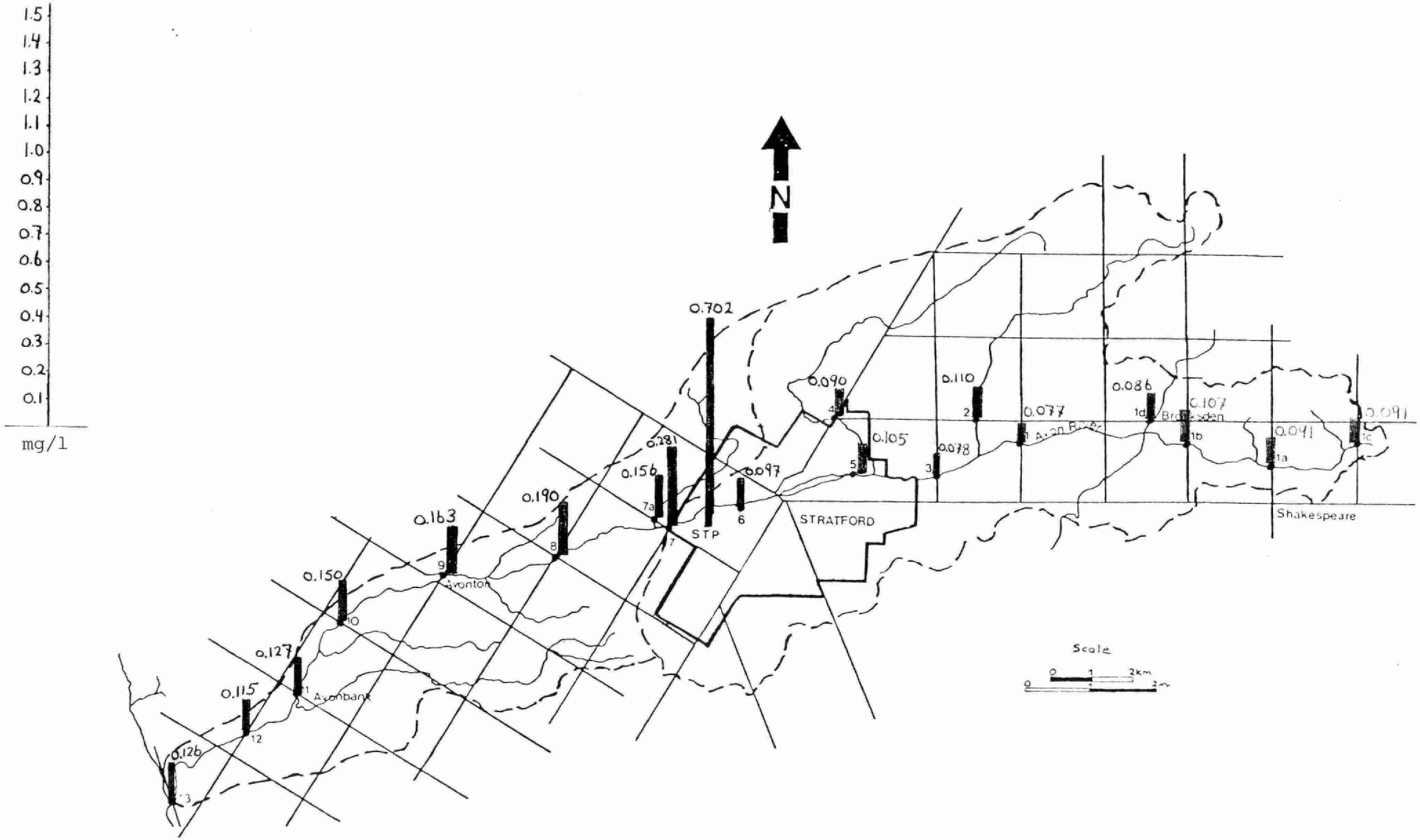

Figure 5. Average 1980-81 total phosphorus concentrations measured in the Avon River.

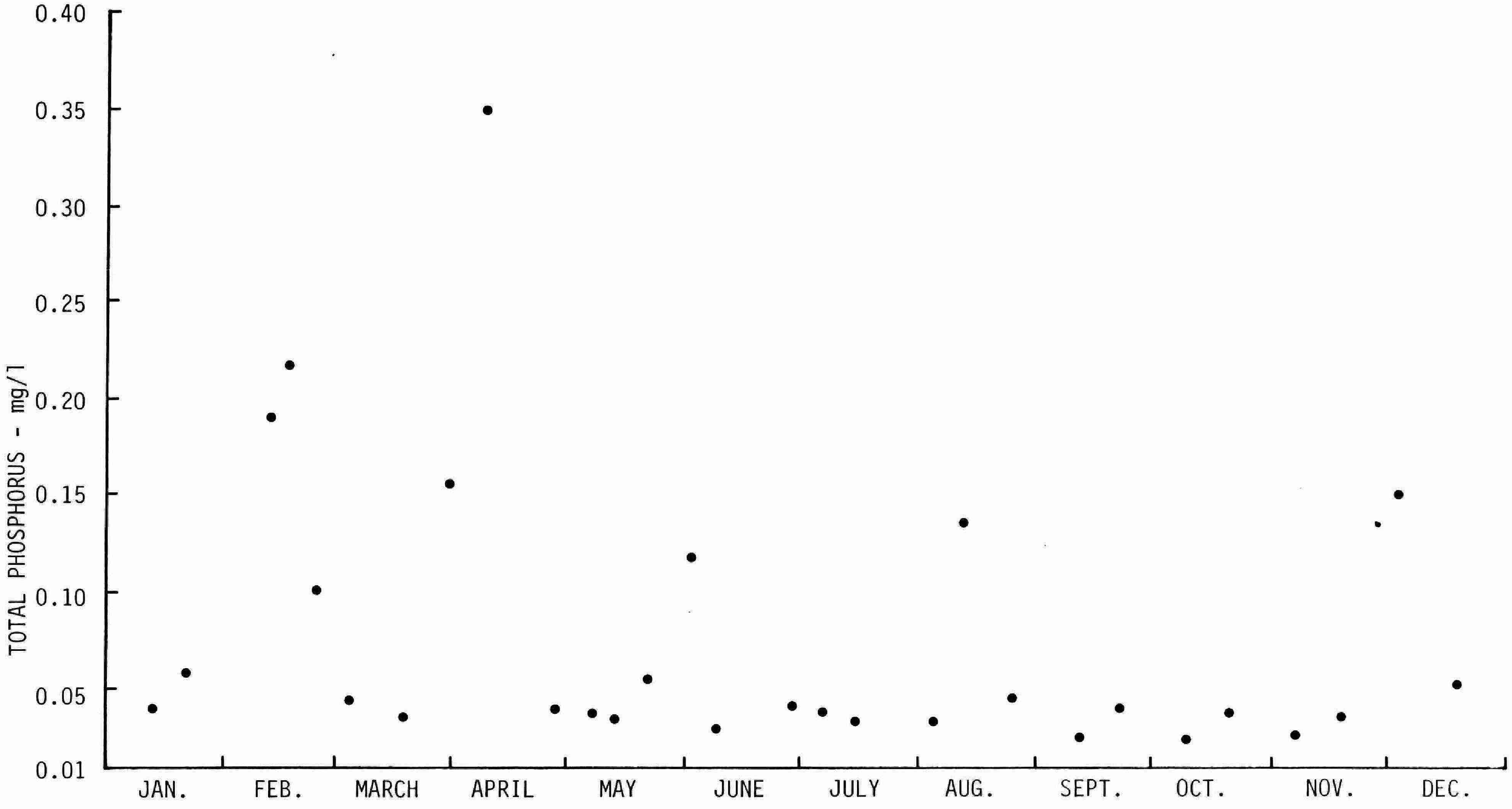

FIGURE 6: INDIVIDUAL TOTAL PHOSPHORUS CONCENTRATIONS MEASURED AT STATION #1, 1980-81

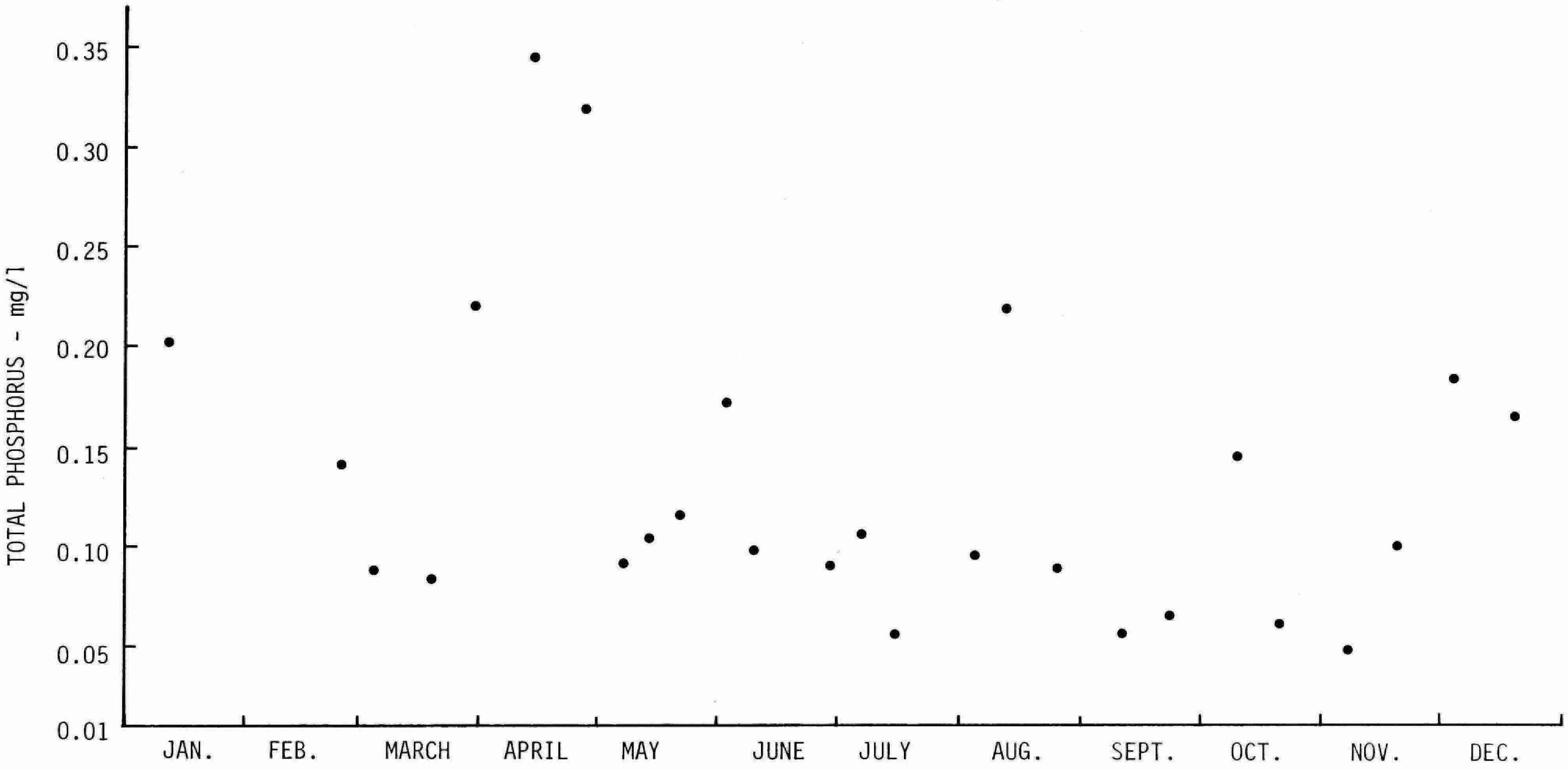

FIGURE 7: INDIVIDUAL TOTAL PHOSPHORUS CONCENTRATIONS MEASURED AT STATION #10, 1980-81

### 3.3 Filtered Reactive Phosphorus

The filtered reactive phosphorus average concentrations upstream of Stratford ranged from 0.013 to 0.049 mg/l. At station #5 the concentration was 0.037 mg/l, dropping to 0.019 mg/l upstream of the sewage treatment plant. The sewage treatment plant contributed an average of 0.322 mg/l filtered reactive phosphorus. The downstream concentration at station 7 was 0.145 mg/l. The rural tributary station #7A had an average concentration of 0.097 mg/l. Downstream of station 7, filtered reactive phosphorus concentrations were progressively lower with increasing downstream distance. At station 13, near the confluence with the Thames River, average concentration was only 0.066 mg/l.

The above information is shown graphically in Figure 8.

### 3.4 Ammonia

The average ammonia concentration at stations upstream of the City of Stratford varied from 0.049 to 0.117 mg/l. At station 5, within the City of Stratford, the aveage concentration was somewhat higher at 0.314 mg/l. At station #6, the average concentration was reduced to 0.145 mg/l. The sewage treatment plant discharged an average ammonia concentration of 3.15 mg/l. Downstream at station 7, the ammonia concentration increased to 0.754 mg/l. The concentration of ammonia decreases to 0.319 at station #13. All the above information is shown graphically in Figure 9.

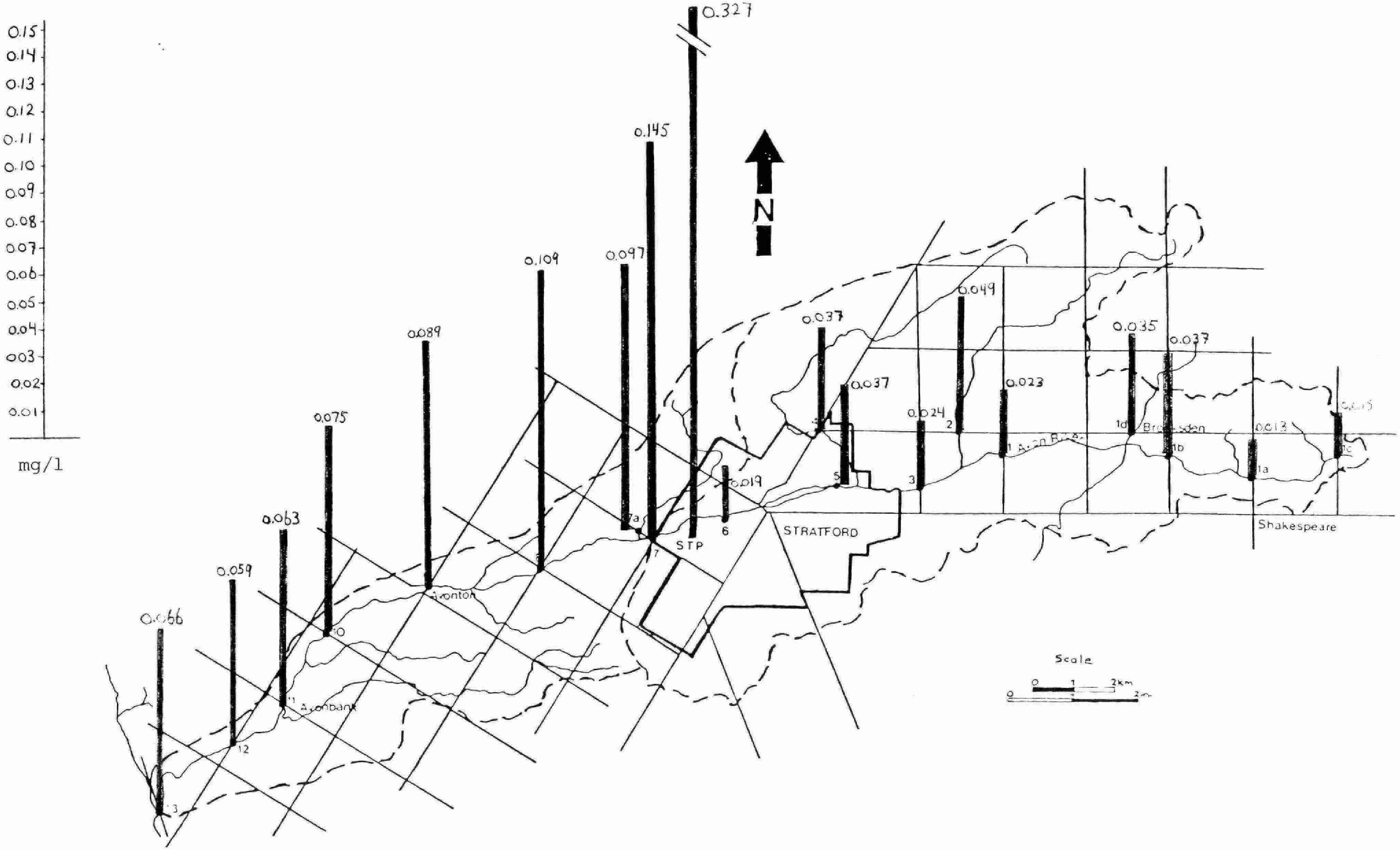

Figure 8. Average 1980-81 dissolved reactive phosphorus concentrations measured in the Avon River.

## 3.5 Nitrate

The nitrate concentrations are shown in Figure 10. The average concentrations at stations upstream of the City of Stratford vary from 3.1 to 14.4 mg/l. The average concentration entering the city (station 3) is 4.0 mg/l and decreases to 3.02 mg/l upstream of the discharge from the sewage treatment plant. The STP discharge had a average concentration of 9.42 mg/l which doubled the downstream concentration (station #7) to 6.16 mg/l. Nitrate levels decrease with increasing downstream distance, reaching 4.4 mg/l at station #13.

## 3.6 Fecal Coliform and Fecal Streptococcus Bacteria

The geometric mean fecal coliform and fecal streptococcus concentrations observed in the Avon River during the survey are shown in Figures 11 and 12, respectively. Gemetric mean levels of both types of bacteria are variable at all stations upstream of the city. Upon entering the city (station 3), average levels are 635 and 390 per 100 mls for fecal coliforms and fecal streptococci, respetively. Through the city, the levels of fecal colilforms and fecal streptococci decrease to 226 and 216 per 100mls at station 6. The geometric mean concentration of fecal coliform and fecal streptococci in the sewage plant discharge was 2028 and 1240 per 100 mls respectivly. Fecal coliform and fecal streptococci levels below the sewage plant at station 7, were higher at 1121 and 467 per 100mls. Further downstream, the levels gradually decreased to a minimum of 220 and 174 for fecal coliform and fecal streptococci respectively at station 13.

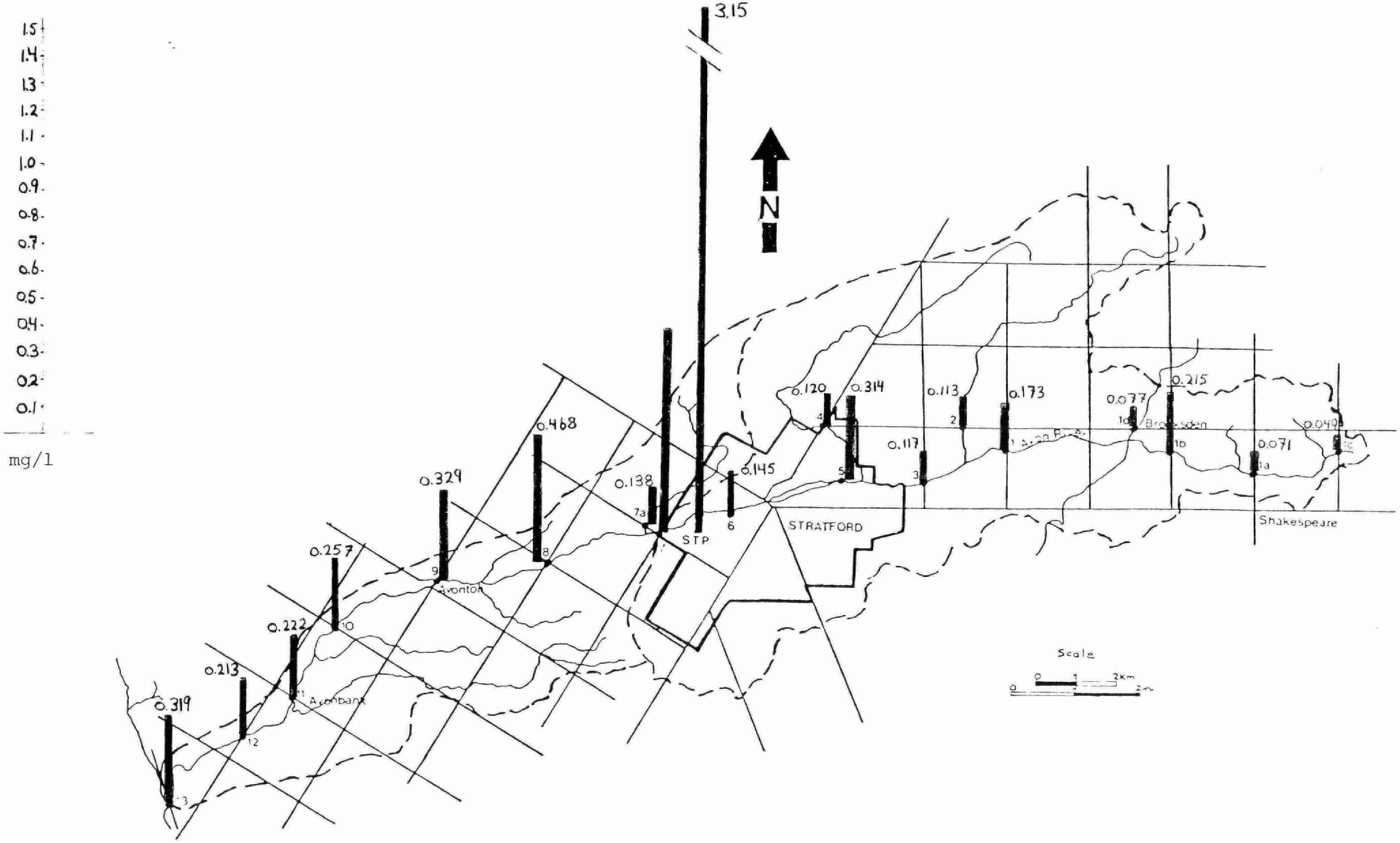

Figure 9. Average 1980-81 ammonia concentrations measured in the Avon River.

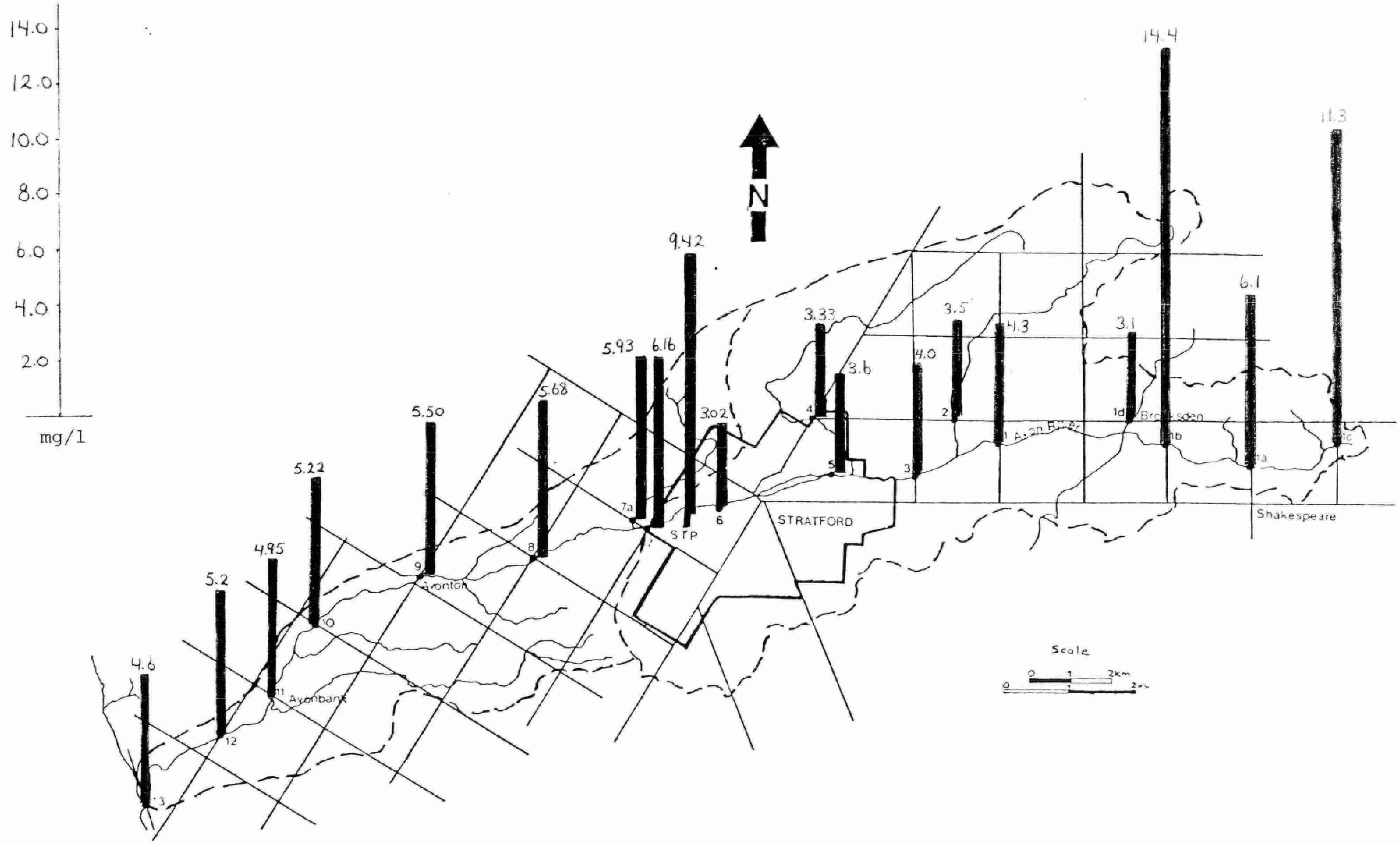

Figure 10. Average 1980-81 nitrate concentrations measured in the Avon River

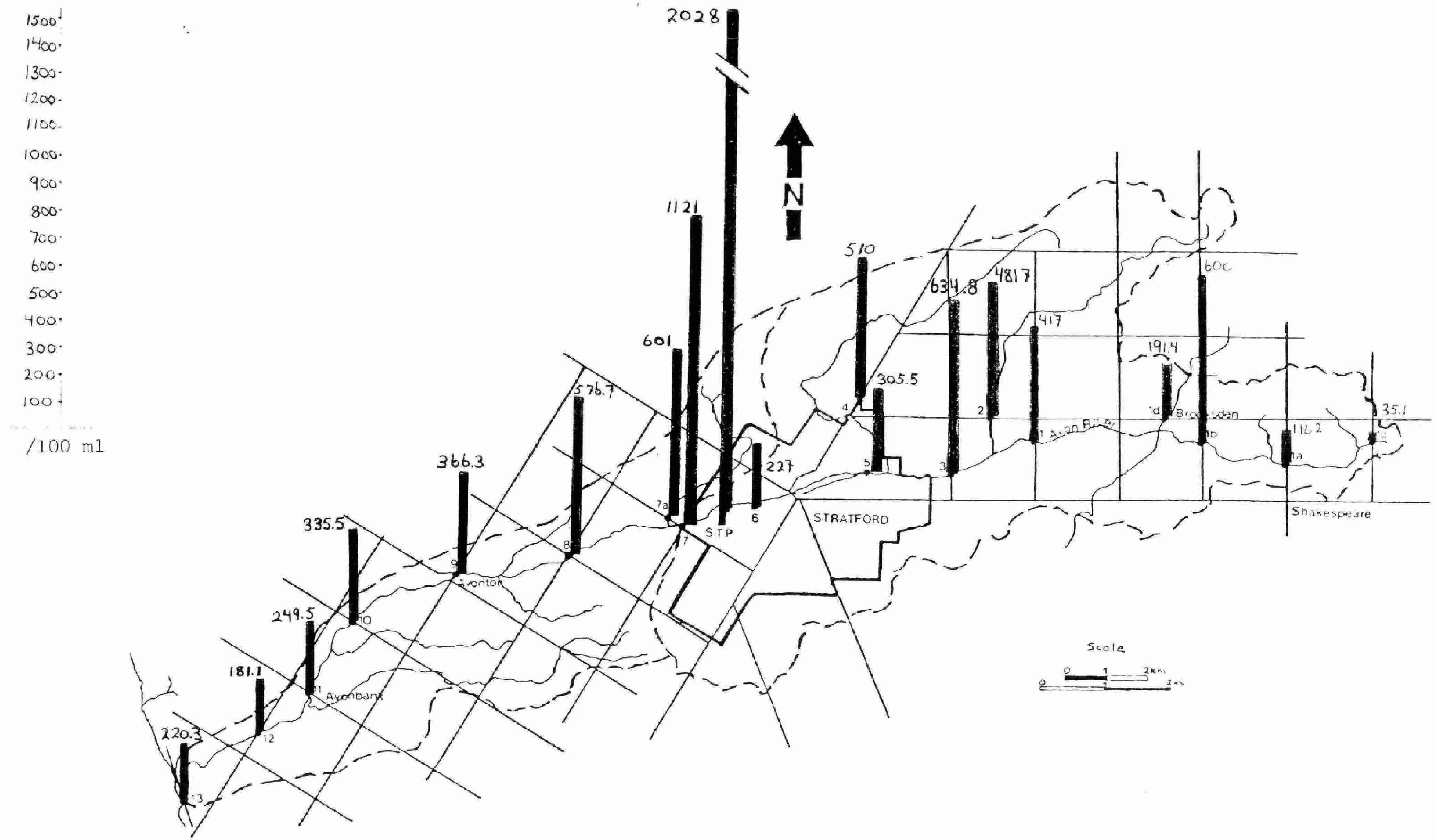

Figure 11. 1980-81 geometric mean levels of fecal coliforms measured in the Avon River.

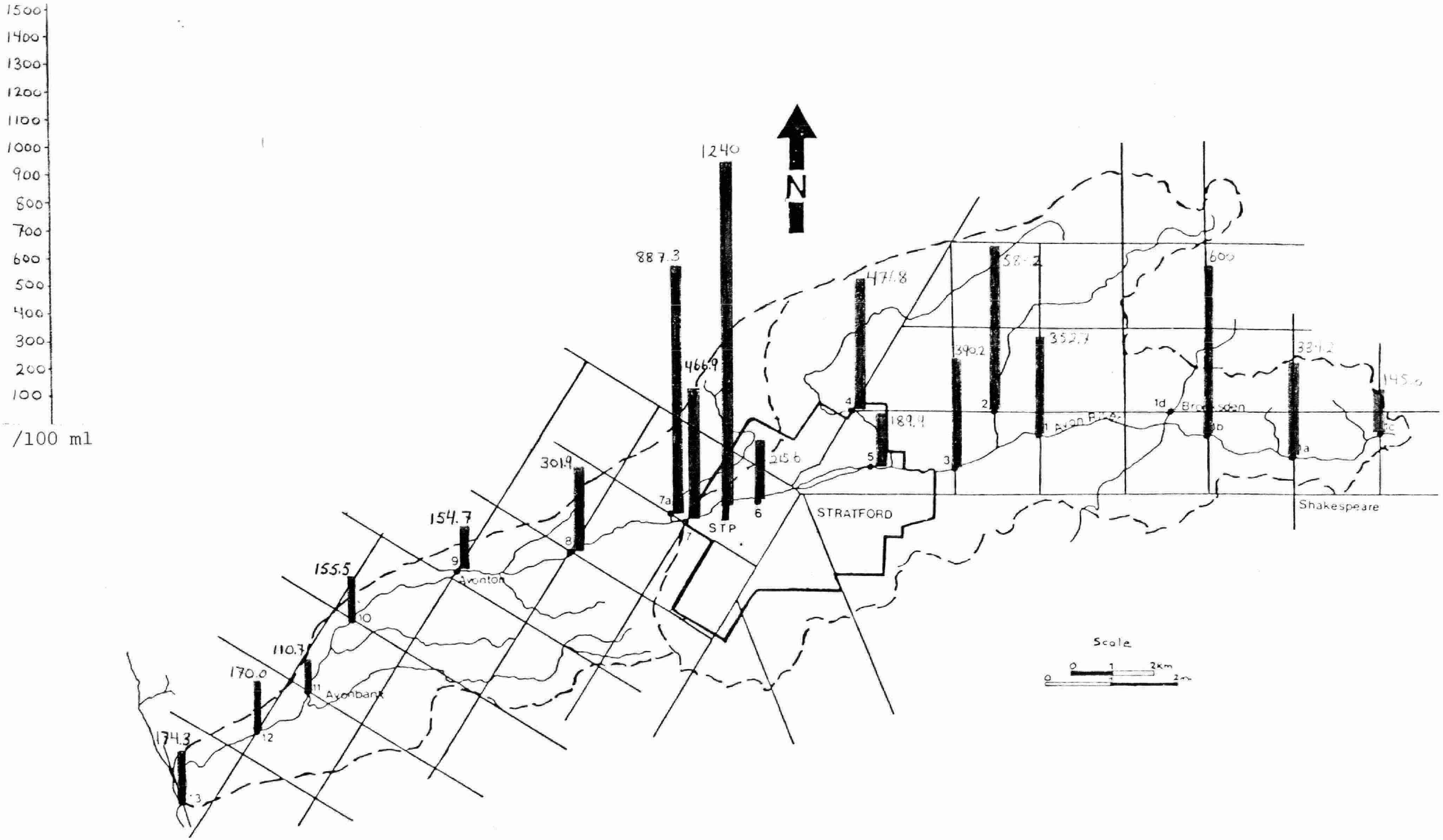

Figure 12. 1980-81 geometric mean levels of fecal streptococcus measured in the Avon River.

TABLE 2: Heavy Metal Concentrations at Sampling Stations on the Avon River - 1981*

| Sampling Station | TYPE** | Al | | Cd | | Cr | | Pb | | Ni | | Cu | | Zn | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | AVE | MAX | AVE | MAX | AVE | MAX | AVE | MAX | AVE | MAX | AVE | MAX | AVE | MAX |
| 3 | UNFILTERED | .71 | 3.2 | L.002 | L.01 | L.088 | .3 | L.006 | L.01 | L.024 | .042 | L.020 | .059 | L.026 | L.03 |
| | FILTERED | L.28 | .8 | L.0002 | .0003 | L.1 | L.1 | L.005 | L.005 | L.025 | L.025 | .013 | .017 | L.03 | L.03 |
| 6 | UNFILTERED | .666 | 1.7 | L.0004 | L.001 | L.072 | .2 | L.007 | .013 | L.019 | L.025 | .011 | .015 | L.068 | .112 |
| | FILTERED | L.15 | .3 | L.0002 | L.0002 | L.1 | L.1 | L.005 | L.005 | L.025 | L.025 | .012 | .015 | L.03 | .03 |
| STP | UNFILTERED | .32 | .52 | L.002 | L.01 | L.085 | .1 | L.006 | L.01 | L.022 | L.025 | L.013 | .015 | .059 | .10 |
| | FILTERED | .1 | .1 | L.0002 | L.0002 | L.1 | .1 | L.005 | L.005 | L.025 | L.025 | .014 | .022 | .058 | .10 |
| 7 | UNFILTERED | .343 | .9 | L.0021 | L.01 | L.055 | L.1 | L.007 | L.01 | L.02 | L.025 | L.013 | .02 | .04 | .052 |
| | FILTERED | L.125 | .2 | L.0002 | L.0002 | L.1 | L.1 | L.005 | L.005 | L.025 | L.025 | .012 | .017 | L.035 | .04 |
| 10 | UNFILTERED | L.366 | .53 | L.0004 | .001 | L.071 | L.1 | L.006 | .01 | L.019 | L.025 | .014 | .03 | L.038 | .054 |
| | FILTERED | L.15 | .2 | L.0002 | L.0002 | L.1 | L.1 | L.005 | L.005 | L.025 | L.025 | .012 | .016 | L.03 | L.03 |
| MOE Criterion | | 0.1 | - | .0002 | - | 0.1 | - | 0.025 | - | 0.025 | - | 0.005 | - | 0.03 | - |

* Raw data is given in Appendix B. "L" denotes "less than".

** Sample size for the unfiltered results in 7 and 4 for the filtered results.

### 3.7 Chlorides

The average chloride concentrations upstream of Stratford were relatively constant in the 12 to 15 mg/l range. Within the city, the levels rose to approximately 35 mg/l above the sewage plant where the discharge contributed a concentration of 220 mg/l. At station #7 below the sewage plant, the concentration was 90 mg/l and remained in the 70 to 85 mg/l range for the remaining downstream stations. This is shown graphically in Figure 13.

### 3.8 Heavy Metals

A summary of the heavy metals in water at stations 3, 6, STP, 7 and 10 are shown in Table 2, while raw data are given in Appendix B.

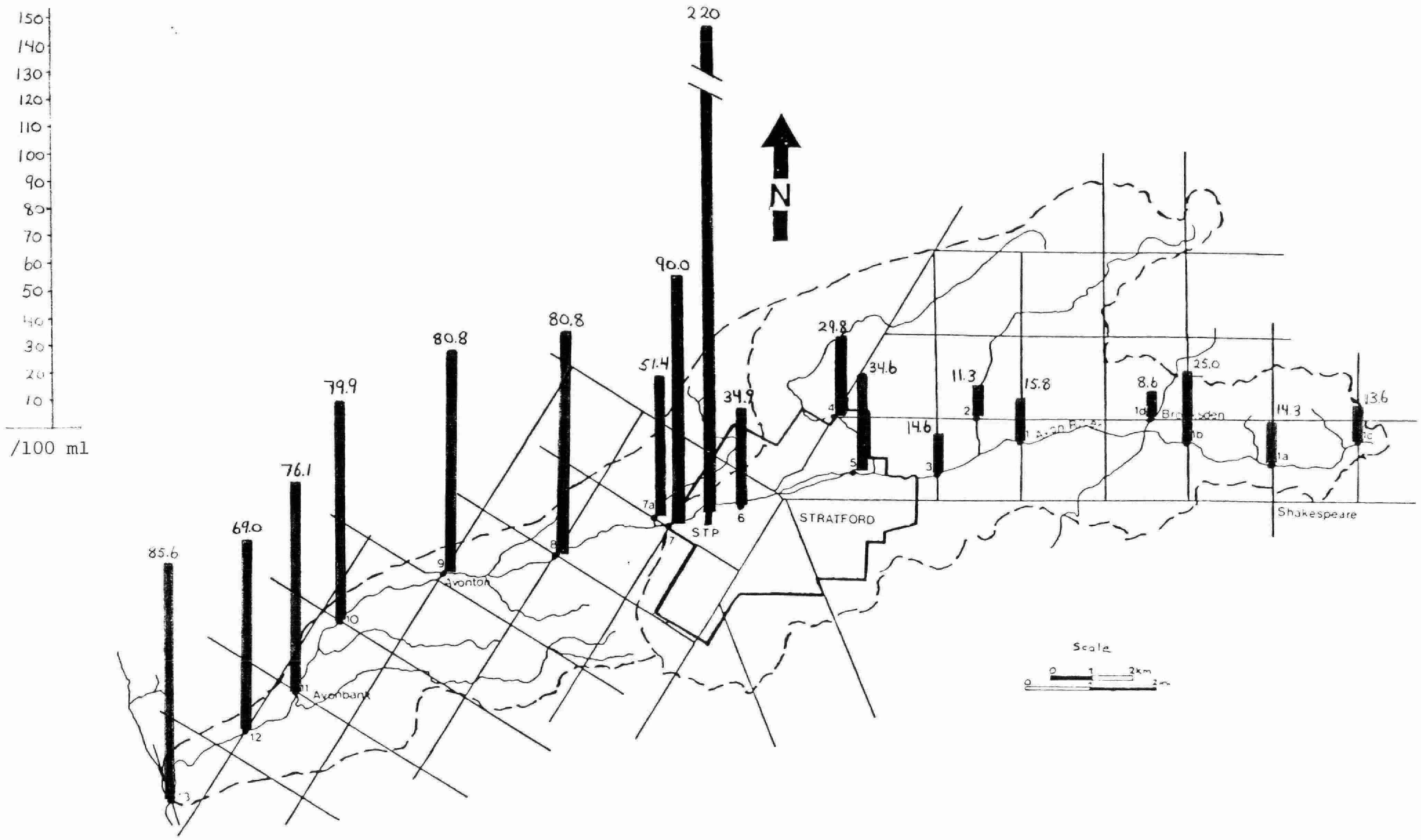

Figure 13. Average 1980-81 chloride concentrations measured in the Avon River.

## 4. DISCUSSION

Analyses of the data from the upstream rural stations-1C, 1A, 1B, 1, 2, 3 and 4 - revealed deteriorated water quality. Elevated phosphorus levels result in excessive weed growths which in turn affect the dissolved oxygen regime of the river. Extreme diurnal dissolved oxygen fluctuations resulted from high rates of photosynthesis (producing oxygen) and respiration (using oygen) in the plant community. As shown in Figure 2, the minimum daily dissolved oxygen levels violated the Ministry of the Environment's dissolved oxygen criterion at station 1 quite regularly.

Concentrations of phosphorus, nitrogen and suspended solids fluctuate widely from sample to sample. The data in Appendix A show that highest concentrations occured during the spring freshet and during rain events. These results suggest that the elevated levels result from erosion and agricultural runoff.

The bacterial quality of the Avon River in the upper rural areas also reveals contamination. Fecal coliform and fecal streptoccci levels reveal moderate to gross contamination depending on the individual sample. Using the ratio of fecal coliform to fecal streptococci concentrations developed by E. E. Geldreich (1), sources of contamination can be determined. The August 12, 1980 sample at station #1 would suggest human pollution while the February 17, 1981 sample at this same station suggests pollution from an animal source. In most of the other samples, there is no clear indication of the type of source. This would suggest that there are a combination of sources or that the sample is not sufficiently fresh to determine origin.

Elevated concentrations of aluminum and copper enter the city (St. #3) from an unidentified rural source or sources. The maximum filtered aluminum concentration was eight times the M.O.E. criterion (2) to protect the growth and survival of fish. Further studies are underway in an attempt to locate the source and determine if it is natural or human in nature.

Stations 5 and 6 reveal the impacts from urban areas in Stratford other than those associated with the sewage treatment plan. The doubling of the chlorides would suggest discharges entering the river throughout the city. Decreases in total phosphorus, free ammonia and nitrates are recorded through the city. This may be attributed to the impact of Lake Victoria on water quality (see Impact of Lake Victoria on the Water Quality of the Avon River, Technical Report S-1, SAREMP). Aluminum and copper concentrations still remain above the Ministry's criteria through this reach. However, concentrations have decreased from the levels detected at Station #3 (upstream of the city). This may be attributed to dilution or settling. Zinc concentrations increase through this reach resulting in violations of M.O.E. criterion. Storm sewers are a likely source of contamination (see Characterization of Industrial Sanitary Discharges, Technical Report U-6, SAREMP).

The geometric means of the bacteriological parameters decrease in the city, probably as a result of dilution and settling. However, individual isolated samples show increases in fecal coliforms and the bacterium Pseudomonas aeruginosa. This may be the result of storm sewers discharging to the river.

Because of the small size of the watershed and the low base-flow conditions, the Stratford sewage treatment plant effluent sometimes constitutes the majority of river flow downstream of Stratford. In order to simplify data display and interpretation, Figures 5 to 13 average all of the data collected under a wide variety of river flow conditions. The chloride data, displayed in Figure 10, can be used to calculate the average dilution the river provided to the STP effluent for all of the conservative parameters collected.

The average ratio of upstream flow to STP flow is calculated to be 2.4:1. Hence, the data displayed and interpreted in this report reflect a condition in which dhe STP discharge account for about 30% of the river flow downstream of Stratford. It should be kept in mind that in low flow periods, the percentage of STP flow would be higher and hence STP impact would be greater.

The Stratford sewage treatment plant had an average of 3.15 mg/l (range 17.6 - 0.035) free ammonia in its discharge. The un-ionized fraction of the free amonia is the toxic portion and is dependent on the temperature and pH conditions. The higher the Ph and temperature, the higher the un-ionized fraction of ammonia. Ammonia is oxidized to nitrate in the sewge treatment process. Good nitrification of ammonia at the STP occurs during the summer and fall months. This results in minimal ammonia toxicity in the Avon River. Using the maximum concentration of ammonia in the discharge and the river pH and temperature at station #6, the resultant unionized ammonia was .34 mg/l. The MOE criterion for unionized ammonia to protect aquatic life is 0.02 mg/l. Usually the unionized ammonia has.little impact on the river due to the spring high flows and the cold water temperatures.

The total phosphorus in the sewage plant discharge averaged 0.70 mg/l, ranging from 3.70 to 0.044 mg/l. The high concentrations occurred during high plant flows in the spring of 1981. The concentration of 0.052 mg/l total phosphorus was observed during phosphorus removal experiments at the sewage treatment plant. By adding a second alum dosage location, vastly improved removal efficiencies were documented (see Technical Report U-4, SAREMP). Earlier Ministry reports recommend that the phosphorus concentrations in the discharge form the Stratford sewage treatment plant be reduced to the lowest levels possible.

The percent of dissolved reactive phosphorus to total phosphorus does not change drastically throughout the watershed. Typically 1/3 to 1/2 of the total is dissolved reactive phosphorus. There was always a substantial concentration in the river. This would indicate that during the study period, phosphorus not limiting to plant growth.

During the phosphorus removal studies at the STP in July 1981, the disolved reactive phosphorus averaged 0.009 mg/l. Below the discharge at station #7, the concentration dropped to 0.002 mg/l. At these levels phosphorus may be limiting. Concentrations then slowly increased with distance downstream.

The discharge from the sewage treatment plant is chlorinated on a seasonal basis. This explains the high concentrations of bacterial organisms in the discharge outside of the May to November period. The toxicity of chlorine is felt to have a more significant impact on the river than the bacterial quality during the non-recreational periods of the year. As shown in Appendix A, bacterial kill in the discharge is very good when chlorination is practiced.

The heavy metal concentrations discharged by the sewage treatment plant were lower or similar to the concentrations in the river. Even though the discharge violated this Ministry's copper and zinc criteria, it did not effect the river because of the elevated upstream concentrations.

There is a definite impact on certain water quality parameters at station #7 because of the STP. The increases in the various parameters can be attributed to the STP discharge, possibly along with the Lorne Street storm sewer. On April 27, 1981 this station was above this Ministry/s criterion for un-ionized ammonia. This was the maximum value recorded at station #7 and it corresponds to the maximum ammonia discharge observed at the STP. All other samples were within our ammonia objective for ammonia.

The total phosphorus, nitrate and bacterial quality at station 7 were also clearly affected by upstream discharges. When elevated concentrations are discharged upstream (spring and wet weather events) the quality at this station acts as the immediate window reflecting drastic variations in water quality. Examples of this are free ammonia - 4.70 to less than 0.005, total phosphorus - 1.35 to 0.072 and $BOD_5$ ranging from 11.6 to 0.4 mg/l.

The bacterial quality is also a reflection of the upstream sources. The concentrations are higher during the periods of no chlorination at the STP. The presence of Pseudomonas aeruginosa would suggest a periodic health hazard.

Station 7A is a tributary station draining agricultural land. Concentrations of various pollutants are generally more elevated than the other upstream rural stations discussed earlier. However, the effects are not as pronounced on the water quality after mixing, due to the increased concentrations in the river below the sewage treatment plant. The presence of the bacterium Pseudomonas aeruginosa would also suggest a public health hazard exists due to the bacterial quality of the stream at this station.

The remaining six downstream stations generally show improving water quality with distance to the mouth. the dissolved oxygen shows the widest variations at these lower sites due to the density of aquatic plant growth. Ideal substrate and a sufficient continuous supply of phosphorus results in luxuriant growth in the lower reaches of the river. The respiration of the above mentioned aquatic plants cause violations in this Ministry's dissolved oxygen criteria during the peak growth phases of the aquatic plants (see Figures 3 and 4).

The sewage treatment plant does contribute significant phosphorus to the system. However, upstream rural inputs are elevated enough to cause similar problems if the sewage treatment plant was removed from the river. The reduction in concentrations of phosphorus and nitrates are probably a result of aquatic plant uptake.

The ammonia concentrations below station 7 are not high enough to result in un-ionized ammonia toxicity. The STP inputs are diluted, assimilated, volatilized and/or settle out to reduce the instream concentrations. The relatively constant concentraion of chlorides would indicate that the dilution is not one of the main causes of reduction in the lower section of the river. A study of ammonia toxicity immediately below the STP is documented elsewhere (SAREMP Technical Report S-8).

The bacterial quality of the river is still in the contaminated range even though the counts reduce with distance to the mouth. The presence of Pseudomonas aeruginosa indicates that a potential health hazard does exist in the lower river. The noticeable reduction in concentrations is probably a result of settling and natural die-off of these organisms.

## 5. CONCLUSIONS AND RECOMMENDATIONS

The Avon River is contaminated as a result of both urban and rural practices. The main contributor within the City of Stratford appears to be the sewage treatment plant. Seasonally high levels of phosphorus, ammonia and bacteria are being discharged during the non-recreational periods of the year. These concentrations result in water quality impairement below the sewage treatment plant.

The phosphorus removal experiments conducted in 1981 could be continued on an operational basis to achieve the best removal possible during the summer and fall. This would reduce downstream concentrations of phosphorus and may help control the growth of aquatic biomass. Dissolved oxygen levels would then improve.

Excellent levels of nitrification of ammonia at the sewage treatment plant were achieved in 1980. A drastic reduction in nitrification was evident in the following year, increasing the risk of ammonia toxicity. If the sewage plant had achieved similar nitrification levels in 1981, there would have been no ammonia toxicity at or below station 7.

Bacteria counts were high in the discharge during the non-chlorination season. Sporadic discharges of Pseudomonas aeruginosa suggest a potential health hazard downstream when the discharge is not chlorinated. The extreme toxicity to aquatic life of chlorine must be weighed against the human uses of the stream during the winter and spring.

The rural areas contribute to elevated concentrations of phosphorus, ammonia, nitates and bacteria. Improved livestock and manure management and soil conservation by erosion control would help reduce this rural impact. Specific control measures include restricted cattle access, buffer strips, grassed waterways, proper drain construction, minimum tillage and crop rotations, just to name a few. It should be pointed out, however, that the overall benefits of these rural measures must be carefully assessed, particularly in light of the fact that the S.T.P. discharge results in a major impact on the river.

As a result of the above-mentioned documentation of deteriorated water quality in the Avon River; it is recommended that:

1. Instream TP levels be moved towards the MOE criterion levels by controls of urban (STP effluent) and/or rural agricultural sources.

2. The variability of STP effluent nitrification levels be studied in order to determine if consistently high nitrification levels are attainable. High nitrification would reduce the likelihood of ammonia toxicity.

3. Rural sources of bacterial contamination be identified and STP disinfection procedures be examined in order to assess the controlability of instream bacterial contamination.

# REFERENCES

1. Geldreich, E. E., "Fecal Coliform Concepts in Stream Pollution" Proceedings, Symposium on Fecal Bacteria in Water and Wastewater, Bureau of Sanitary Engineering, State Dept. of Public Health, Berkeley, California (1968).

2. Ministry of the Environment, "Water Management Goals, Policies, Objectives and Implementation Procedures of the Ministry of the Environment", 1978.

3. Ministry of the Environment "Advanced Phosphorus Control at the Stratford WPCP," Technical Report U-4, SAREMP.

4. Ministry of the Environment "Impact of Lake Victoria on Water Quality of the Avon River," Techincal Report S-1, SAREMP.

5. Ministry of the Environment "Characterization of Industrial Sanitary Discharges," Techincal Report U-6, SAREMP.

6. Bachus, A., "Simulation of Effluent Dispersion" Technical Report S-8, SAREMP.

# APPENDICES

ROUTINE MONITORING DATA AT STATION 1, AVON DRAIN AT SIDEROAD 35/36, N. EASTHOPE TWP.

| DATE | D.O. MG/L | TEMP °C | BOD5 MG/L | PSEU. ARUG. | FECAL COL. | FECAL STREP. | TOT. PHO. | SOL. PHO. | FREE AMM. | TKN | NIT-RITE | NIT-RATE | SUS. SOL. | PH UNITS | COND. UMHOS /CM | CHLOR-IDE MG/L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  | --- BACTERIA/100 ML --- |  |  | ---------- | ---------- | ---------- | MG/L | ---------- | ---------- | ---------- |  |  |  |
| ROUTINE MONITORING DATA FOR 1980 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 7/ 5/80 | 14 | 8.4 | 1 | L 4 | 376 | A 900 | 0.038 | 0.005 | 0.015 | 0.61 | 0.032 | 3.3 | 6.5 | 8.08 | 595 | 11.5 |
| 21/ 5/80 | 13.6 | 14.2 | 1.2 | L 4 | 176 | 464 | 0.056 | 0.01 | 0.025 | 0.64 | 0.031 | 4.97 | 3.5 | 8.2 | 585 | 14 |
| 2/ 6/80 | 6.8 | 13 | 2.1 | L 4 | G 600 | G 600 | 0.118 | 0.041 | 0.4 | 1.26 | 0.083 | 5.3 | 25 | 7.87 | 590 | 17 |
| 30/ 6/80 | 9.7 | 16.4 | 2.2 | L 4 | 3500 | 580 | 0.041 | 0.005 | 0.095 | 0.84 | 0.104 | 3.3 | 10 | 8.02 | 580 | 13.5 |
| 15/ 7/80 | 8.6 | 18.8 | 1.6 | 4 | 3600 | 1080 | 0.031 | 0.004 | 0.04 | 0.6 | 0.072 | 2.3 | 4.9 | 7.98 | 570 | 13 |
| 12/ 8/80 | 8.3 | 19 | 3 | 80 | G15200 | 2600 | 0.136 | 0.052 | 0.48 | 1.52 | 0.113 | 2.5 | 13.5 | 7.91 | 497 | 17 |
| 25/ 8/80 | 10.2 | 16.8 | 1 | L 4 | 1700 | A 90 | 0.046 | L0.001 | 0.015 | 0.48 | 0.107 | 2.29 | 1.3 | 8.11 | 580 | 13 |
| 11/ 9/80 | 10.2 | 13 | 1.1 | L 4 | 900 | 370 | 0.026 | 0.008 | 0.015 | 0.45 | 0.039 | 2.86 | 2.2 | 7.96 | 600 | 13.5 |
| 22/ 9/80 | 10.8 | 14.5 | 0.6 | 4 | 530 | 750 | 0.04 | 0.013 | 0.025 | 0.48 | 0.001 | 2.44 | 2.1 | 7.96 | 620 | 13.5 |
| 9/10/80 | 10.4 | 8 | 1 | L 4 | 420 | 340 | 0.024 | 0.004 | 0.005 | 0.49 | 0.02 | 2.6 | 1.2 | 7.87 | 620 | 13.5 |
| 20/10/80 | 13.3 | 7 | 0.9 | L 4 | 190 | 220 | 0.038 | 0.015 | 0.02 | 0.68 | 0.031 | 4.02 | 1.6 | 7.86 | 645 | 15.5 |
| 6/11/80 | 13.4 | 5 | 1.3 | L 4 | 130 | G1500 | 0.028 | 0.01 | 0.05 | 0.52 | 0.023 | 3.03 | 20.4 | 8.01 | 620 | 13.5 |
| 19/11/80 | 13.2 | 2 | 1.1 | L 4 | A 70 | A 50 | 0.034 | 0.008 | 0.005 | 0.46 | 0.01 | 3.69 | 19.5 | 8.01 | 630 | 17 |
| 3/12/80 | 13.4 | -0.5 | 2.5 | 4 | G 600 | G 500 | 0.15 | 0.051 | 0.135 | 1.38 | 0.041 | 11.7 | 38.2 | 7.62 | 590 | 23.5 |
| 18/12/80 | 15.2 | -1 | 0.6 | L 4 | 210 | 28 | 0.052 | 0.014 | 0.065 | 0.7 | 0.027 | 5.02 | 23.5 | 8.08 | 655 | 15.5 |
| MINIMUM | 6.8 | -1 | 0.6 | L 4 | 70 | A 28 | 0.024 | 0.001 | 0.005 | 0.45 | 0.001 | 2.29 | 1.2 | 7.62 | 497 | 11.5 |
| GEO.MEAN | 11.1 | 10.4 | 1.3 | L 5 | 607 | 397 | 0.047 | 0.01 | 0.037 | 0.68 | 0.032 | 3.55 | 6.5 | 7.97 | 597 | 14.7 |
| ARI.MEAN | 11.4 | 10.3 | 1.4 | L 9 | G 1830 | G 578 | 0.057 | 0.016 | 0.093 | 0.74 | 0.049 | 3.95 | 11.5 | 7.97 | 598 | 15 |
| MAXIMUM | 15.2 | 19 | 3 | L80 | 15200 | 2600 | 0.15 | 0.052 | 0.48 | 1.52 | 0.113 | 11.7 | 38.2 | 8.2 | 655 | 23.5 |
| ROUTINE MONITORING DATA FOR 1981 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12/ 1/81 | 12.6 | 0.5 | 0.3 | L4 | 24 | A 40 | 0.04 | 0.012 | 0.175 | 0.72 | 0.015 | 3.83 | 14.7 | 7.65 | 630 | 12.5 |
| 21/ 1/81 | 11.2 | 2 | 1.3 | L4 | 72 | 256 | 0.057 | 0.02 | 0.325 | 0.85 | 0.014 | 3.6 | 11.1 | 7.67 | 620 | 15.5 |
| 12/ 2/81 | 10.4 | 1 | 4.7 | L4 | 392 | G 500 | 0.19 | 0.08 | 1.1 | 2.2 | 0.035 | 3.8 | 12.4 | 7.48 | 580 | 16 |
| 17/ 2/81 | 7.7 | 1 | 5.4 | L4 | 990 | G23000 | 0.216 | 0.097 | 0.98 | 2.46 | 0.035 | 4.21 | 32 | 7.55 | 570 | 33.5 |
| 25/ 2/81 | 10.8 | 1 | 1.6 | L4 | 330 | 2700 | 0.1 | 0.042 | 0.16 | 1.28 | 0.032 | 7 | 18.9 | 7.74 | 485 | 12 |
| 4/ 3/81 | 10.4 | 2 | 0.6 | L4 | 110 | A 50 | 0.043 | 0.024 | 0.13 | 0.82 | 0.024 | 6.2 | 7.6 | 7.83 | 600 | 13 |
| 19/ 3/81 | 8.3 | 2.5 | 0.6 | L4 | L 10 | 40 | 0.036 | 0.016 | 0.03 | 0.5 | 0.015 | 4.93 | 4.4 | 7.89 | 610 | 13 |
| 31/ 3/81 | 10.8 | 7 | 1.6 | 4 | 1170 | 490 | 0.156 | 0.044 | 0.125 | 1.34 | 0.036 | 7.6 | 46.6 | 7.79 | 520 | 15.5 |
| 14/ 4/81 | 10.2 | 8 | 4 | 4 | 3500 | 1450 | 0.35 | 0.09 | 0.28 | 2 | 0.046 | 3.5 | 122.6 | 7.79 | 487 | 29.5 |
| 27/ 4/81 | 17 | 14 | 1.5 | L4 | L 10 | L 10 | 0.04 | 0.002 | L0.005 | 0.8 | 0.03 | 4.17 | 6.5 | 8.24 | 580 | 13.5 |
| 13/ 5/81 | 15.5 | 10.2 | 1.7 | L4 | 416 | 32 | 0.034 | 0.003 | 0.02 | 0.76 | 0.029 | 4.6 | 4.4 | 8.12 | 595 | 15.5 |
| 9/ 6/81 | 15.2 | 18.8 | - | L4 | 810 | 52 | 0.03 | 0.006 | 0.035 | 0.58 | 0.059 | 2.4 | 2.6 | 8.21 | 565 | 11 |
| 6/ 7/81 | 12.4 | 19.9 | 1.5 | L4 | 520 | 540 | 0.04 | 0.005 | 0.225 | 1.36 | 0.22 | 7.7 | 2.2 | 8.09 | 600 | 21.5 |
| 4/ 8/81 | 12.3 | 20 | - | 4 | 540 | 500 | 0.034 | 0.012 | 0.02 | 0.46 | 0.096 | 2.05 | 1.9 | 8.15 | 560 | 12 |
| MINIMUM | 7.7 | 0.5 | 0.3 | L4 | 10 | A 10 | 0.03 | 0.002 | 0.005 | 0.46 | 0.014 | 2.05 | 1.9 | 7.48 | 485 | 11 |
| GEO.MEAN | 11.5 | 4 | 1.5 | L4 | 227 | 243 | 0.068 | 0.018 | 0.106 | 1 | 0.036 | 4.37 | 9.8 | 7.87 | 570 | 15.7 |
| ARI.MEAN | 11.8 | 7.7 | 2.1 | L4 | 635 | G 2126 | 0,098 | 0.032 | 0.258 | 1.15 | 0.049 | 4.69 | 20.6 | 7.87 | 572 | 16.7 |
| MAXIMUM | 17 | 20 | 5.4 | L4 | 3500 | G23000 | 0.35 | 0.097 | 1.1 | 2.46 | 0.22 | 7.7 | 122.6 | 8.24 | 630 | 33.5 |

NOTES: L = LESS THAN, G = GREATER THAN, A = APPROXIMATELY.
MEANS ARE BASED ON RECORDED VALUES INCLUDING THOSE MARKED L,
G OR A. THEY MUST THEREFORE BE INTERPRETED WITH SOME CAUTION.

ROUTINE MONITORING DATA AT STATION 1A, AVON DRAIN AT COUNTY ROAD 14, N. EASTHOPE TWP.

| DATE | D.O. | TEMP | BOD5 | PSEU. AERUG. | FECAL COL. | FECAL STREP. | TOT. PHO. | SOL. PHO. | FREE AMM. | TKN | NIT-RITE | NIT-RATE | SUS. SOL. | PH | COND. UMHOS /CM | CHLOR-IDE MG/L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MG/L | oC | MG/L | --- BACTERIA/100 ML --- | | | --------------------- MG/L ------------------- | | | | | | | UNITS | | |
| ROUTINE MONITORING DATA FOR 1980 | | | | | | | | | | | | | | | | |
| 31/10/80 | - | - | 0.9 | - | - | - | 0.044 | 0.006 | 0.03 | 1.12 | 0.02 | 5.03 | 5.1 | 7.82 | - | 29 |
| 5/11/80 | 12.4 | 4.5 | 1.8 | L 4 | L 10 | 450 | 0.048 | 0.002 | 0.015 | 0.92 | 0.013 | 3.09 | 10.4 | 8 | 530 | 14 |
| 19/11/80 | 11.1 | 0.1 | 1.4 | L 4 | 12 | 190 | 0.05 | 0.002 | 0.04 | 1.04 | 0.018 | 4.18 | 29.5 | 7.98 | 580 | 15.5 |
| 3/12/80 | 12.6 | 0.1 | 1 | 8 | 528 | G500 | 0.078 | 0.016 | 0.075 | 1.22 | 0.028 | 17.5 | 22.1 | 7.59 | 710 | 21 |
| 18/12/80 | 12.4 | -0.1 | 1.2 | L 4 | 12 | 600 | 0.072 | 0.003 | 0.17 | 1.28 | 0.037 | 7.2 | 46.8 | 7.69 | 645 | 16.5 |
| MINIMUM | 11.1 | -0.1 | 0.9 | 4 | 10 | 190 | 0.044 | 0.002 | 0.015 | 0.92 | 0.013 | 3.09 | 5.1 | 7.59 | 530 | 14 |
| GEO.MEAN | 12.1 | 0.4 | 1.2 | L 5 | L 30 | 419 | 0.057 | 0.004 | 0.047 | 1.11 | 0.022 | 6.06 | 18.1 | 7.81 | 613 | 18.5 |
| ARI.MEAN | 12.1 | 1.2 | 1.3 | L 5 | 141 | 460 | 0.058 | 0.006 | 0.066 | 1.12 | 0.023 | 7.4 | 23 | 7.82 | 616 | 19.2 |
| MAXIMUM | 12.6 | 4.5 | 1.8 | 8 | 528 | G500 | 0.078 | 0.016 | 0.17 | 1.28 | 0.037 | 17.5 | 46.8 | 8 | 710 | 29 |
| ROUTINE MONITORING DATA FOR 1981 | | | | | | | | | | | | | | | | |
| 25/ 2/81 | 10.2 | 1 | 1.3 | L4 | A 30 | 2100 | 0.104 | 0.046 | 0.155 | 1.2 | 0.04 | 9.2 | 16.9 | 7.83 | 462 | 10 |
| 4/ 3/81 | 6.4 | 1 | 0.7 | L4 | 150 | A 50 | 0.064 | 0.019 | 0.14 | 0.98 | 0.039 | 8.7 | 21.2 | 7.85 | 550 | 11.5 |
| 19/ 3/81 | 13.2 | 0 | 0.6 | L4 | 140 | 96 | 0.082 | 0.003 | 0.05 | 1.14 | 0.029 | 6.9 | 8 | 7.86 | 570 | 13 |
| 31/ 3/81 | 5.8 | 7.3 | 1.8 | L4 | 240 | 180 | 0.058 | 0.003 | 0.02 | 1.14 | 0.023 | 9.2 | 14.7 | 7.83 | 510 | 11 |
| 14/ 4/81 | 10.2 | 8.5 | 3.2 | L4 | G1500 | G1500 | 0.255 | 0.041 | 0.23 | 1.85 | 0.047 | 6.2 | 72.7 | 7.77 | 467 | 13 |
| 27/ 4/81 | 17.8 | 17 | - | L4 | L 10 | L 10 | 0.052 | 0.001 | 0.005 | 1 | 0.026 | 5.97 | 35 | 8.08 | 491 | 11.5 |
| 13/ 5/81 | 16 | 10.8 | 2.2 | L4 | 140 | 108 | 0.206 | 0.003 | 0.06 | 2.12 | 0.031 | 4.62 | 5.1 | 8.21 | 540 | 12 |
| 9/ 5/81 | 17.9 | 15 | - | L4 | 380 | 556 | 0.086 | 0.01 | 0.035 | 1.22 | 0.1 | 1.05 | 10.8 | 8.29 | 392 | 11 |
| 6/ 7/81 | 11.2 | 21.9 | 1.8 | L4 | 670 | 390 | 0.07 | 0.018 | 0.035 | 0.98 | 0.25 | 2.8 | 16.2 | 7.78 | 450 | 11 |
| 4/ 9/81 | 1.9 | 21 | - | L4 | 550 | 1450 | 0.088 | 0.019 | 0.01 | 1 | 0.002 | L0.01 | 8.2 | 7.44 | 390 | 13.5 |
| MINIMUM | 1.9 | 0 | 0.6 | L4 | A 10 | 10 | 0.052 | 0.001 | 0.005 | 0.98 | 0.002 | 0.01 | 5.1 | 7.44 | 390 | 10 |
| GEO.MEAN | 9.4 | 7.5 | 1.4 | L4 | 203 | A 249 | 0.092 | 0.009 | 0.042 | 1.22 | 0.034 | 2.76 | 15.5 | 7.89 | 478 | 11.7 |
| ARI.MEAN | 11.1 | 10.4 | 1.7 | L4 | 386 | 645 | 0.107 | 0.016 | 0.074 | 1.26 | 0.059 | 5.47 | 20.9 | 7.89 | 482 | 11.8 |
| MAXIMUM | 17.9 | 21.9 | 3.2 | L4 | 1500 | 2100 | 0.255 | 0.046 | 0.23 | 2.12 | 0.25 | 9.2 | 72.7 | 8.29 | 570 | 13.5 |

NOTES: L = LESS THAN, G = GREATER THAN, A = APPROXIMATELY.
MEANS ARE BASED ON RECORDED VALUES INCLUDING THOSE MARKED L,
G OR A. THEY MUST THEREFORE BE INTERPRETED WITH SOME CAUTION.

ROUTINE MONITORING DATA AT STATION 1B, AVON DRAIN AT SIDEROAD 25/26, N. EASTHOPE TWP.

| DATE | D.O. | TEMP | BOD5 | PSEU. AERUG. | FECAL COL. | FECAL STREP. | TOT. PHO. | SOL. PHO. | FREE AMM. | TKN | NIT-RITE | NIT-RATE | SUS. SOL. | PH | COND. UMHOS /CM | CHLOR-IDE MG/L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MG/L | oC | MG/L | --- BACTERIA/100 ML --- | | | --------------------- MG/L ------------------- | | | | | | | UNITS | | |
| ROUTINE MONITORING DATA FOR 1980 | | | | | | | | | | | | | | | | |
| 3/12/80 | 15.6 | -0.6 | 2 | L4 | G500 | G500 | 0.104 | 0.037 | 0.215 | 1.34 | 0.035 | 14.4 | 32.1 | 7.67 | 660 | 25 |
| MINIMUM | 15.6 | -0.6 | 2 | L4 | G500 | G500 | 0.104 | 0.037 | 0.215 | 1.34 | 0.035 | 14.4 | 32.1 | 7.67 | 660 | 25 |
| GEO.MEAN | 15.6 | 2.7 | 2 | L4 | G500 | G500 | 0.104 | 0.037 | 0.215 | 1.34 | 0.035 | 14.4 | 32.1 | 7.67 | 660 | 25 |
| ARI.MEAN | 15.6 | -0.6 | 2 | L4 | G500 | G500 | 0.104 | 0.037 | 0.215 | 1.34 | 0.035 | 14.4 | 32.1 | 7.67 | 660 | 25 |
| MAXIMUM | 15.6 | -0.6 | 2 | L4 | G500 | G500 | 0.104 | 0.037 | 0.215 | 1.34 | 0.035 | 14.4 | 32.1 | 7.67 | 660 | 25 |

NOTES: L = LESS THAN, G = GREATER THAN, A = APPROXIMATELY.
MEANS ARE BASED ON RECORDED VALUES INCLUDING THOSE MARKED L,
G OR A. THEY MUST THEREFORE BE INTERPRETED WITH SOME CAUTION.

ROUTINE MONITORING DATA AT STATION 1C, AVON DRAIN AT SIDEROAD 15/16, N. EASTHOPE TWP.

| DATE | D.O. | TEMP | BOD5 | PSEU. AERUG. | FECAL COL. | FECAL STREP. | TOT. PHO. | SOL. PHO. | FREE AMM. | TKN | NITRITE | NITRATE | SUS. SOL. | PH | COND. UMHOS /CM | CHLORIDE MG/L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MG/L | °C | MG/L | --- BACTERIA/100 ML --- | | | --- MG/L --- | | | | | | | UNITS | | |
| ROUTINE MONITORING DATA FOR 1980 | | | | | | | | | | | | | | | | |
| 19/11/80 | - | - | 1.8 | L4 | A20 | 370 | 0.054 | 0.002 | 0.205 | 1.1 | 0.038 | 8.1 | 23 | 7.81 | 625 | 15 |
| 18/12/80 | 17.6 | 0 | 0.4 | L4 | 40 | 112 | 0.022 | 0.002 | 0.135 | 0.86 | 0.028 | 13 | 39.1 | 7.95 | 640 | 16 |
| MINIMUM | 17.6 | 0 | 0.4 | L4 | A20 | 112 | 0.022 | 0.002 | 0.135 | 0.86 | 0.028 | 8.1 | 23 | 7.81 | 625 | 15 |
| GEO.MEAN | 17.6 | 2.7 | 0.8 | L4 | 28 | 204 | 0.034 | 0.002 | 0.166 | 0.97 | 0.033 | 10.26 | 30 | 7.88 | 632 | 15.5 |
| ARI.MEAN | 17.6 | 0 | 1.1 | L4 | A30 | 241 | 0.038 | 0.002 | 0.17 | 0.98 | 0.033 | 10.55 | 31.1 | 7.89 | 633 | 15.5 |
| MAXIMUM | 17.6 | 0 | 1.8 | L4 | 40 | 370 | 0.054 | 0.002 | 0.205 | 1.1 | 0.038 | 13 | 39.1 | 7.96 | 640 | 16 |
| ROUTINE MONITORING DATA FOR 1981 | | | | | | | | | | | | | | | | |
| 25/ 2/81 | 10.6 | 1 | 1.4 | L4 | A 10 | 4500 | 0.154 | 0.09 | 0.06 | 1.44 | 0.044 | 16.2 | 18.9 | 7.53 | 510 | 11.5 |
| 4/ 3/81 | 10.2 | 1.5 | 0.6 | L4 | L 10 | A 30 | 0.05 | 0.011 | 0.03 | 1.02 | 0.015 | 16.4 | 14.3 | 7.92 | 600 | 14.5 |
| 19/ 3/81 | 14.2 | 0 | 0.4 | L4 | L 4 | 8 | 0.024 | 0.002 | 0.025 | 0.94 | 0.019 | 11.1 | 13.4 | 8.03 | 580 | 14 |
| 31/ 3/81 | 13 | 7 | 0.3 | L4 | L 10 | A 10 | 0.08 | 0.017 | 0.02 | 1.02 | 0.015 | 19.4 | 23.8 | 7.72 | 610 | 14.5 |
| 14/ 4/81 | 12.2 | 9.5 | 2 | 4 | G1500 | G 500 | 0.17 | 0.016 | 0.025 | 1.75 | 0.03 | 12.9 | 74.7 | 7.98 | 550 | 14 |
| 27/ 4/81 | 15.4 | 20 | 2.2 | L4 | A 20 | 8 | 0.038 | 0.001 | 0.005 | 1.04 | 0.034 | 14.2 | 16 | 8.31 | 585 | 16.5 |
| 13/ 5/81 | 15.5 | 12.5 | 1.4 | L4 | 4 | 12 | 0.014 | 0.001 | 0.01 | 0.88 | 0.031 | 14.9 | 4.6 | 8.05 | 510 | 15 |
| 9/ 6/81 | 14.8 | 24.2 | - | L4 | 64 | 104 | 0.038 | 0.002 | 0.035 | 1.2 | 0.086 | 5.6 | 21.5 | 8.42 | 452 | 11.5 |
| 6/ 7/81 | 15.8 | 27.1 | 8.2 | 8 | 448 | 520 | 0.066 | L0.001 | 0.02 | 1.14 | 0.048 | 3.3 | 6.8 | 8.48 | 448 | 10.5 |
| 4/ 8/81 | 7.2 | 22 | - | L4 | 1200 | 790 | 0.39 | 0.043 | 0.02 | 1.1 | 0.026 | 0.4 | 293.2 | 7.76 | 458 | 9.5 |
| MINIMUM | 7.2 | 0 | 0.3 | L4 | A 4 | 8 | 0.014 | 0.001 | 0.005 | 0.88 | 0.015 | 0.4 | 4.5 | 7.63 | 448 | 9.5 |
| GEO.MEAN | 12.6 | 8.9 | 1.2 | L4 | L 42 | A 88 | 0.065 | 0.006 | 0.021 | 1.13 | 0.03 | 8.06 | 21.4 | 8.03 | 536 | 13 |
| ARI.MEAN | 12.9 | 12.5 | 2.1 | L4 | L 327 | 658 | 0.102 | 0.018 | 0.025 | 1.15 | 0.035 | 11.44 | 48.7 | 8.03 | 540 | 13.2 |
| MAXIMUM | 15.8 | 27.1 | 8.2 | L8 | L1500 | A4500 | 0.39 | 0.09 | 0.06 | 1.75 | 0.086 | 19.4 | 293.2 | 8.48 | 610 | 16.5 |

NOTES: L = LESS THAN, G = GREATER THAN, A = APPROXIMATELY.
MEANS ARE BASED ON RECORDED VALUES INCLUDING THOSE MARKED L,
G OR A. THEY MUST THEREFORE BE INTERPRETED WITH SOME CAUTION.

ROUTINE MONITORING DATA AT STATION 1D, CENTRAL SCHOOL DR. AT COU. RD 31, N. EASTHOPE TWP.

| DATE | D.O. | TEMP | BOD5 | PSEU. AERUG. | FECAL COL. | FECAL STREP. | TOT. PHO. | SOL. PHO. | FREE AMM. | TKN | NITRITE | NITRATE | SUS. SOL. | PH | COND. UMHOS /CM | CHLORIDE MG/L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MG/L | °C | MG/L | --- BACTERIA/100 ML --- | | | --- MG/L --- | | | | | | | UNITS | | |
| ROUTINE MONITORING DATA FOR 1981 | | | | | | | | | | | | | | | | |
| 25/ 2/81 | 10.2 | 1 | 1.4 | L 4 | 150 | 550 | 0.106 | 0.049 | 0.15 | 1.3 | 0.021 | 7 | 13.1 | 7.72 | 464 | 8 |
| 4/ 3/81 | 9.8 | 0 | 0.2 | L 4 | 250 | 240 | 0.054 | 0.021 | 0.165 | 1.04 | 0.022 | 7.2 | 17.3 | 7.76 | 570 | 10.5 |
| 19/ 3/81 | 11.6 | 0 | 1.2 | L 4 | A 50 | 210 | 0.054 | 0.023 | 0.135 | 0.86 | 0.031 | 4.52 | 8.3 | 7.85 | 580 | 8.5 |
| 31/ 3/81 | 5.8 | 7 | 0.9 | L 4 | 860 | A 90 | 0.062 | 0.019 | 0.08 | 1.1 | 0.016 | 7.2 | 13.7 | 7.79 | 510 | 9.5 |
| 14/ 4/81 | 10 | 8.5 | 3.4 | 68 | G1500 | G1500 | 0.245 | 0.089 | 0.355 | 1.8 | 0.045 | 2.2 | 39.7 | 7.83 | 468 | 11.5 |
| 27/ 4/81 | 17.8 | 17 | 1.4 | L 4 | A 30 | A 40 | 0.046 | 0.006 | 0.025 | 0.92 | 0.019 | 3.03 | 10 | 8.22 | 515 | 8.5 |
| 13/ 5/81 | 15.2 | 11.5 | 1 | L 4 | 20 | 48 | 0.034 | 0.009 | 0.01 | 0.86 | 0.018 | 4.7 | 2.8 | 8.2 | 550 | 9.5 |
| 9/ 6/81 | G20 | 20 | - | L 4 | G 500 | 40 | 0.076 | 0.002 | 0.015 | 1.32 | 0.108 | 0.98 | 21 | 8.18 | 520 | 5.5 |
| 6/ 7/81 | 11.6 | 21.2 | 1.4 | 4 | 540 | 500 | 0.036 | 0.006 | 0.025 | 0.84 | 0.049 | 0.71 | 4 | 8.12 | 530 | 7.5 |
| 4/ 8/81 | 6.5 | 23 | - | L 4 | 140 | 260 | 0.076 | 0.034 | 0.02 | 0.72 | 0.003 | L0.01 | 10.5 | 7.8 | 525 | 6.5 |
| MINIMUM | 5.8 | 0 | 0.2 | L 4 | 20 | 40 | 0.034 | 0.002 | 0.01 | 0.72 | 0.003 | 0.01 | 2.8 | 7.72 | 464 | 5.5 |
| GEO.MEAN | 11.1 | 10.2 | 1.1 | L 5 | 191 | 181 | 0.065 | 0.016 | 0.053 | 1.04 | 0.024 | 1.8 | 11 | 7.94 | 523 | 8.4 |
| ARI.MEAN | 11.9 | 10.9 | 1.4 | L10 | A 414 | 348 | 0.079 | 0.026 | 0.098 | 1.08 | 0.033 | 3.76 | 14 | 7.95 | 524 | 8.6 |
| MAXIMUM | 20 | 23 | 3.4 | L68 | 1500 | A1500 | 0.245 | 0.089 | 0.355 | 1.8 | 0.108 | 7.2 | 39.7 | 8.22 | 580 | 11.5 |

NOTES: L = LESS THAN, G = GREATER THAN, A = APPROXIMATELY.
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G OR A. THEY MUST THEREFORE BE INTERPRETED WITH SOME CAUTION.

ROUTINE MONITORING DATA AT STATION 2, KUHNE DRAIN AT COUNTY ROAD 31, N. EASTHOPE TWP.

| DATE | D.O. | TEMP | BOD5 | PSEU. ARUG. | FECAL COL. | FECAL STREP. | TOT. PHO. | SOL. PHO. | FREE AMM. | TKN | NIT-RITE | NIT-RATE | SUS. SOL. | PH | COND. UMHOS | CHLORIDE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MG/L | oC | MG/L | --- BACTERIA/100 ML --- | | | ---------- | | | MG/L | ---------- | | | UNITS | /CM | MG/L |
| ROUTINE MONITORING DATA FOR 1980 | | | | | | | | | | | | | | | | |
| 7/ 5/80 | 16.4 | 7.5 | 1.5 | L 4 | A 800 | A 800 | 0.053 | 0.012 | 0.045 | 0.8 | 0.21 | 4.24 | 2 | 8.44 | 742 | 51 |
| 21/ 5/80 | 13.5 | 15 | 1.5 | L 4 | 200 | 92 | 0.06 | 0.016 | 0.025 | 0.7 | 0.024 | 5.38 | 1.5 | 8.29 | 570 | 9.5 |
| 2/ 6/80 | 8.5 | 12.6 | 1.8 | 152 | 30000 | 9900 | 0.112 | 0.053 | 0.19 | 1.09 | 0.061 | 2.1 | 8 | 8.14 | 590 | 9.5 |
| 30/ 6/80 | 11.4 | 18 | 2.5 | 4 | 610 | 290 | 0.1 | 0.058 | 0.14 | 0.69 | 0.073 | 1.25 | 9 | 8.28 | 570 | 10 |
| 15/ 7/80 | 8.8 | 22.3 | 1.9 | 8 | G 1500 | G1500 | 0.078 | 0.036 | 0.1 | 0.58 | 0.028 | 0.22 | 9.4 | 8.13 | 530 | 7.5 |
| 12/ 8/80 | 9.8 | 22.2 | 2.1 | 52 | 7300 | 640 | 0.118 | 0.067 | 0.06 | 0.74 | 0.063 | 0.89 | 7.5 | 8.26 | 550 | 11 |
| 25/ 8/80 | 9.9 | 22.4 | 1.6 | L 4 | 1900 | 230 | 0.206 | 0.04 | 0.035 | 0.9 | 0.025 | 0.14 | 142.1 | 8.1 | 560 | 8 |
| 11/ 9/80 | 11.2 | 16 | 0.8 | 4 | 1000 | 520 | 0.063 | 0.031 | 0.02 | 0.51 | 0.023 | 0.35 | 4 | 8.34 | 560 | 9 |
| 22/ 9/80 | 8.7 | 17.5 | 0.8 | L 4 | 1000 | G1500 | 0.094 | 0.047 | 0.015 | 0.52 | 0.001 | 0.33 | 3.1 | 8.27 | 595 | 8.5 |
| 9/10/80 | 14.8 | 9 | 1 | L 4 | 110 | 110 | 0.047 | 0.018 | 0.01 | 0.35 | 0.011 | 0.43 | 2.2 | 8.13 | 575 | 8 |
| 20/10/80 | 16.8 | 6 | 0.7 | 4 | 260 | 1160 | 0.07 | 0.049 | 0.02 | 0.56 | 0.03 | 3.42 | 2.8 | 8.11 | 650 | 11 |
| 6/11/80 | 15.8 | 3 | 1.4 | L 4 | A 40 | 650 | 0.071 | 0.049 | 0.02 | 0.41 | 0.014 | 2.14 | 12.8 | 8.19 | 615 | 8.5 |
| 19/11/80 | 14.7 | 1 | 1 | L 4 | 84 | 720 | 0.078 | 0.047 | 0.025 | 0.42 | 0.012 | 3.19 | 27.2 | 8.07 | 630 | 9.5 |
| 3/12/80 | 14.8 | 0 | 1.7 | 16 | G 600 | G1500 | 0.134 | 0.045 | 0.205 | 1.28 | 0.05 | 12 | 34.7 | 7.78 | 640 | 18 |
| 18/12/80 | 14.5 | 0 | 1.3 | L 4 | 290 | 900 | 0.086 | 0.04 | 0.085 | 0.78 | 0.023 | 4.3 | 30.2 | 8.02 | 615 | 9.5 |
| MINIMUM | 8.5 | 0 | 0.7 | L 4 | A 40 | A 92 | 0.047 | 0.012 | 0.01 | 0.35 | 0.001 | 0.14 | 1.5 | 7.78 | 530 | 7.5 |
| GEO.MEAN | 12.3 | 10.2 | 1.4 | L 7 | 632 | 678 | 0.085 | 0.037 | 0.043 | 0.65 | 0.026 | 1.36 | 8.3 | 8.17 | 597 | 10.7 |
| ARI.MEAN | 12.6 | 11.5 | 1.4 | 18 | 3046 | 1367 | 0.091 | 0.041 | 0.066 | 0.69 | 0.043 | 2.69 | 19.8 | 8.17 | 599 | 12.6 |
| MAXIMUM | 16.8 | 22.4 | 2.6 | 152 | 30000 | 9900 | 0.206 | 0.067 | 0.205 | 1.28 | 0.21 | 12 | 142.1 | 8.44 | 742 | 51 |
| ROUTINE MONITORING DATA FOR 1981 | | | | | | | | | | | | | | | | |
| 17/ 2/81 | 10 | 0.5 | 7.8 | 12 | 3800 | G62100 | 0.44 | 0.215 | 1.18 | 3.3 | 0.047 | 4.35 | 59.1 | 7.35 | 422 | 10.5 |
| 25/ 2/81 | 10.8 | 1 | 1.4 | L 4 | A 200 | 3100 | 0.118 | 0.055 | 0.13 | 1.22 | 0.028 | 7.1 | 21.3 | 7.8 | 442 | 8 |
| 4/ 3/81 | 12.2 | 0.5 | 0.2 | L 4 | 420 | 560 | 0.054 | 0.04 | 0.11 | 0.78 | 0.017 | 6.5 | 7.6 | 7.97 | 540 | 9 |
| 19/ 3/81 | 11.2 | 0 | 0.3 | L 4 | A 10 | 100 | 0.05 | 0.035 | 0.095 | 0.66 | 0.014 | 4.59 | 5.8 | 8.03 | 590 | 9 |
| 31/ 3/81 | 11.9 | 5.5 | 1.5 | 52 | 650 | 420 | 0.12 | 0.049 | 0.105 | 1.16 | 0.025 | 9.2 | 22.9 | 7.87 | 540 | 10.5 |
| 14/ 4/81 | 11.8 | 8 | 4.2 | 84 | G1500 | G 1500 | 0.315 | 0.131 | 0.425 | 2.3 | 0.072 | 4.8 | 48.7 | 7.96 | 530 | 13 |
| 27/ 4/81 | 17.2 | 15.5 | 1.2 | L 4 | L 10 | L 10 | 0.056 | 0.007 | 0.01 | 0.68 | 0.023 | 3.48 | 6 | 8.34 | 540 | 9.5 |
| 13/ 5/81 | 14.6 | 10.2 | 1.6 | L 4 | 256 | 108 | 0.054 | 0.018 | 0.015 | 0.78 | 0.027 | 7.4 | 5.3 | 8.27 | 600 | 11.5 |
| 9/ 6/81 | 15.4 | 21.2 | - | L 4 | 430 | 84 | 0.106 | 0.004 | 0.045 | 1.02 | 0.06 | 1.04 | 47.9 | 8.13 | 505 | 7 |
| 6/ 7/81 | 14.3 | 24.7 | 1.4 | 8 | 470 | 404 | 0.104 | 0.063 | 0.05 | 0.76 | 0.139 | 1.21 | 1.9 | 8.5 | 540 | 11.5 |
| 4/ 8/81 | 12.9 | 23.3 | - | L 4 | 460 | 680 | 0.084 | 0.053 | 0.015 | 0.5 | 0.015 | 0.08 | 1.9 | 8.35 | 493 | 5.5 |
| MINIMUM | 10 | 0 | 0.2 | 4 | 10 | G 10 | 0.05 | 0.004 | 0.01 | 0.5 | 0.014 | 0.08 | 1.9 | 7.35 | 422 | 5.5 |
| GEO.MEAN | 12.8 | 5.5 | 1.3 | L 8 | A 277 | 454 | 0.104 | 0.037 | 0.074 | 1.01 | 0.033 | 2.86 | 11.4 | 8.05 | 519 | 9.4 |
| ARI.MEAN | 12.9 | 10.1 | 2.2 | L17 | 746 | 6279 | 0.136 | 0.061 | 0.198 | 1.2 | 0.042 | 4.52 | 20.9 | 8.05 | 522 | 9.6 |
| MAXIMUM | 17.2 | 24.7 | 7.8 | L84 | 43800 | 62100 | 0.44 | 0.215 | 1.18 | 3.3 | 0.139 | 9.2 | 59.1 | 8.5 | 600 | 13 |

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MEANS ARE BASED ON RECORDED VALUES INCLUDING THOSE MARKED L,
G OR A. THEY MUST THEREFORE BE INTERPRETED WITH SOME CAUTION.

ROUTINE MONITORING DATA AT STATION 3, AVON DRAIN AT SIDEROAD 40/41, N. EASTHOPE TWP.

| DATE | D.O. MG/L | TEMP °C | BOD5 MG/L | PSEU. ARUG. | FECAL COL. | FECAL STREP. | TOT. PHO. | SOL. PHO. | FREE AMM. | TKN | NIT-RITE | NIT-RATE | SUS. SOL. | PH UNITS | COND. UMHOS /CM | CHLOR-IDE MG/L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  | --- BACTERIA/100 ML --- |  |  | ------------------- | MG/L | ------------------- |  |  |  |  |  |  |  |
| ROUTINE MONITORING DATA FOR 1980 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 7/ 5/80 | 13.8 | 8.4 | 1.4 | L 4 | 292 | 200 | 0.056 | 0.012 | 0.02 | 0.74 | 0.033 | 3.37 | 11.5 | 8.06 | 585 | 13 |
| 21/ 5/80 | 13.5 | 14 | 1.4 | L 4 | 192 | 224 | 0.062 | 0.018 | 0.03 | 0.76 | 0.03 | 4.87 | 7 | 8.06 | 590 | 14 |
| 2/ 6/80 | 6.8 | 12.9 | 2.4 | 40 | 17000 | 6700 | 0.121 | 0.035 | 0.315 | 1.31 | 0.08 | 3.7 | 37 | 7.89 | 590 | 16 |
| 30/ 6/80 | 9.8 | 16.2 | 1.6 | 4 | 2500 | 290 | 0.064 | 0.026 | 0.22 | 0.91 | 0.112 | 2.6 | 8.5 | 8.01 | 590 | 14 |
| 15/ 7/80 | 7.5 | 20.5 | 2.7 | L 4 | 3900 | 700 | 0.084 | 0.003 | 0.1 | 1.11 | 0.057 | 1.71 | 28.9 | 7.9 | 540 | 12 |
| 12/ 8/80 | 8.4 | 19.2 | 2.2 | 260 | G36000 | 1700 | 0.108 | 0.048 | 0.115 | 0.94 | 0.103 | 1.9 | 9.2 | 7.93 | 570 | 16.5 |
| 25/ 8/80 | 7.7 | 20.5 | 0.7 | L 4 | 1500 | 150 | 0.036 | 0.007 | 0.035 | 0.54 | 0.038 | 1.74 | 2.5 | 7.96 | 560 | 12 |
| 11/ 9/80 | 10.4 | 16 | 0.9 | L 4 | 1200 | 350 | 0.037 | 0.007 | 0.02 | 0.67 | 0.034 | 2.32 | 7.7 | 8.04 | 585 | 13.5 |
| 22/ 9/80 | 8.6 | 16 | 0.9 | L 4 | 2600 | 790 | 0.038 | 0.007 | 0.025 | 0.54 | 0.062 | 1.95 | 3 | 8.05 | 605 | 12.5 |
| 9/10/80 | 11.6 | 9 | 1 | L 4 | 220 | 110 | 0.03 | 0.01 | 0.035 | 0.38 | 0.021 | 2.2 | 3.1 | 7.95 | 600 | 13 |
| 20/10/80 | 14.1 | 6.5 | 1.7 | L 4 | 240 | 300 | 0.046 | 0.023 | 0.035 | 0.8 | 0.032 | 3.87 | 4 | 7.92 | 655 | 16 |
| 5/11/80 | 12.2 | 5 | 1.3 | L 4 | 110 | 1140 | 0.038 | 0.015 | 0.04 | 0.52 | 0.024 | 2.88 | 21.5 | 8.06 | 640 | 8.5 |
| 19/11/80 | 12.6 | 1.6 | 1.1 | L 4 | A 20 | 190 | 0.032 | 0.018 | 0.015 | 0.45 | 0.013 | 3.54 | 13.6 | 7.98 | 645 | 15 |
| 3/12/80 | 14.4 | -0.5 | 3.2 | L 4 | G 1500 | G 600 | 0.29 | 0.049 | 0.15 | 1.78 | 0.048 | 12 | 205 | 7.68 | 619 | 24 |
| 18/12/80 | 12.4 | -0.1 | 1.5 | L 4 | 170 | 530 | 0.066 | 0.027 | 0.105 | 0.72 | 0.026 | 4.8 | 33.1 | 7.94 | 650 | 15.5 |
| MINIMUM | 6.8 | -0.5 | 0.7 | L 4 | 20 | 110 | 0.03 | 0.003 | 0.015 | 0.38 | 0.013 | 1.71 | 2.5 | 7.68 | 540 | 8.5 |
| GEO.MEAN | 10.6 | 10.7 | 1.5 | L 6 | 815 | 463 | 0.059 | 0.016 | 0.054 | 0.75 | 0.04 | 3.07 | 11.6 | 7.96 | 601 | 14 |
| ARI.MEAN | 10.9 | 11 | 1.6 | 23 | 4496 | 932 | 0.074 | 0.02 | 0.084 | 0.81 | 0.048 | 3.56 | 26.4 | 7.96 | 602 | 14.4 |
| MAXIMUM | 14.4 | 20.5 | 3.2 | 260 | 36000 | 6700 | 0.29 | 0.049 | 0.315 | 1.78 | 0.112 | 12 | 205 | 8.06 | 555 | 24 |
| ROUTINE MONITORING DATA FOR 1981 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12/ 1/81 | 12 | -0.5 | 0.7 | L 4 | G 500 | 470 | 0.062 | 0.033 | 0.25 | 0.92 | 0.016 | 3.43 | 11.9 | 7.58 | 640 | 13 |
| 21/ 1/81 | 11.2 | -0.7 | 1.5 | L 4 | 150 | 150 | 0.068 | 0.029 | 0.205 | 0.69 | 0.015 | 3.14 | 14.4 | 7.73 | 620 | 12 |
| 25/ 2/81 | 10.6 | 1 | 1.8 | L 4 | A 600 | 1600 | 0.106 | 0.042 | 0.145 | 1.26 | 0.031 | 6.7 | 17.7 | 7.75 | 465 | 12 |
| 4/ 3/81 | 14.2 | 1.5 | 0.3 | L 4 | 210 | 410 | 0.05 | 0.033 | 0.13 | 0.94 | 0.023 | 6 | 11.4 | 7.87 | 570 | 13 |
| 19/ 3/81 | 8 | 0.5 | 1.1 | L 4 | L 10 | A 30 | 0.046 | 0.026 | 0.07 | 0.64 | 0.017 | 4.58 | 5.6 | 7.91 | 620 | 14.5 |
| 31/ 3/81 | 10.6 | 7.5 | 1.6 | 32 | 130 | 9600 | 0.154 | 0.053 | 0.125 | 1.3 | 0.034 | 8 | 35.4 | 7.75 | 530 | 16 |
| [illegible]/31 | 10.4 | 8 | 3.8 | [illegible] | G 500 | G1500 | 0.28 | 0.096 | 0.33 | 1.75 | 0.05 | 3.7 | 76 | 7.85 | 530 | 27 |
| 27/ 4/81 | 14.1 | 13 | 2 | L 4 | L 10 | A 50 | 0.054 | 0.003 | L0.005 | 0.86 | 0.031 | 3.72 | 10.7 | 8.17 | 590 | 15 |
| 13/ 5/81 | 14.2 | 10 | 0.8 | L 4 | 232 | 96 | 0.034 | 0.009 | 0.01 | 0.74 | 0.029 | 5.7 | 4.6 | 8.12 | 607 | 14.5 |
| 9/ 6/81 | 12.8 | 18.7 | - | L 4 | 550 | 76 | 0.034 | 0.003 | 0.06 | 0.6 | 0.07 | 1.8 | 3.8 | 8.09 | 555 | 10 |
| 6/ 7/81 | 11.4 | 29.1 | 1.5 | L 4 | 600 | 344 | 0.058 | 0.012 | 0.17 | 1.24 | 0.21 | 7.49 | 6.7 | 8.14 | 595 | 20 |
| 4/ 9/81 | 11 | 21 | - | L 4 | 950 | 410 | 0.04 | 0.01 | 0.025 | 0.56 | 0.048 | 1.45 | 3.2 | 8.12 | 540 | 11 |
| MINIMUM | 8 | -0.7 | 0.3 | L 4 | G 10 | 30 | 0.034 | 0.003 | 0.005 | 0.56 | 0.015 | 1.45 | 3.2 | 7.58 | 466 | 10 |
| GEO.MEAN | 11.6 | 6.1 | 1.2 | L 6 | 227 | 317 | 0.067 | 0.019 | 0.076 | 0.9 | 0.035 | 4.13 | 10.6 | 7.92 | 570 | 14.3 |
| ARI.MEAN | 11.7 | 9.1 | 1.5 | L 8 | A 470 | 1228 | 0.083 | 0.029 | 0.127 | 0.96 | 0.048 | 4.64 | 16.8 | 7.92 | 572 | 14.8 |
| MAXIMUM | 14.2 | 29.1 | 3.8 | L32 | 1500 | 9600 | 0.28 | 0.096 | 0.33 | 1.75 | 0.21 | 8 | 76 | 8.17 | 640 | 27 |

NOTES: L = LESS THAN, G = GREATER THAN, A = APPROXIMATELY.
MEANS ARE BASED ON RECORDED VALUES INCLUDING THOSE MARKED L,
G OR A. THEY MUST THEREFORE BE INTERPRETED WITH SOME CAUTION.

ROUTINE MONITORING DATA AT STATION 4, COURT DRAIN AT HWY. 19 JUST NORTH OF STRATFORD

| DATE | D.O.<br>MG/L | TEMP<br>°C | BOD5<br>MG/L | PSEU. ARUG.<br>--- BACTERIA/100 ML --- | FECAL COL. | FECAL STREP. | TOT. PHO.<br>MG/L | SOL. PHO. | FREE AMM. | TKN | NIT-RITE | NIT-RATE | SUS. SOL. | PH<br>UNITS | COND. UMHOS /CM | CHLOR-IDE<br>MG/L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROUTINE MONITORING DATA FOR 1980 | | | | | | | | | | | | | | | | |
| 7/ 5/80 | 14.9 | 9 | 1.4 | L 4 | 272 | 84 | 0.061 | 0.019 | 0.01 | 1.1 | 0.022 | 1.95 | 2 | 8.18 | 590 | 19 |
| 21/ 5/80 | 12.8 | 13 | 0.9 | L 4 | 164 | 228 | 0.048 | 0.024 | 0.02 | 1.06 | 0.022 | 3.63 | 3 | 8.13 | 600 | 17 |
| 2/ 6/80 | 7 | 13.9 | 1.6 | L 4 | 3300 | 260 | 0.109 | 0.036 | 0.01 | 1.23 | 0.024 | 1.18 | 6.5 | 8 | 630 | 32.5 |
| 30/ 5/80 | 13 | 17 | 2.6 | G 0 | 440 | 330 | 0.053 | 0.013 | 0.03 | 1.21 | 0.114 | 1.61 | 6.5 | 8.28 | 630 | 27.5 |
| 15/ 7/80 | 6.4 | 21.1 | 2.6 | 76 | 1600 | G1500 | 0.104 | 0.042 | 0.03 | 1.06 | 0.025 | 0.12 | 3.2 | 7.94 | 550 | 43.5 |
| 12/ 8/80 | 8.4 | 19.2 | 2.2 | 68 | G1500 | 570 | 0.142 | 0.081 | 0.05 | 1.08 | 0.031 | 0.63 | 9.7 | 7.86 | 510 | 38.5 |
| 25/ 8/80 | 7.7 | 20.5 | 2.6 | 20 | 660 | 140 | 0.182 | 0.057 | 0.14 | 1.58 | 0.016 | 0.09 | 12.5 | 8.01 | 570 | 47.5 |
| 22/ 9/80 | 8.6 | 16 | 1.1 | 88 | 270 | 550 | 0.104 | 0.04 | 0.065 | 0.92 | 0.03 | 0.03 | 4 | 7.92 | 560 | 21 |
| 9/10/80 | 10 | 9 | 1.3 | 60 | 150 | 490 | 0.066 | 0.037 | 0.03 | 1.02 | 0.008 | 0.33 | 2.4 | 8.02 | 670 | 30 |
| 20/10/80 | 14.4 | 6.5 | 1.3 | L 4 | 350 | 740 | 0.036 | 0.013 | 0.015 | 1.2 | 0.028 | 5 | 1.8 | 8.03 | 775 | 37 |
| 6/11/80 | 15.8 | 3 | 0.8 | L 4 | A 70 | G1500 | 0.022 | 0.007 | 0.01 | 0.88 | 0.009 | 2.79 | 3.9 | 8.18 | 715 | 24 |
| 19/11/80 | 12.8 | 0.5 | 0.9 | L 4 | 80 | 340 | 0.017 | 0.008 | 0.01 | 0.94 | 0.009 | 3.44 | 3.2 | 8.1 | 755 | 29.5 |
| 3/12/80 | 14.8 | -0.5 | 1.7 | 4 | G1500 | G1500 | 0.11 | 0.04 | 0.085 | 1.36 | 0.033 | 14.2 | 19.5 | 7.77 | 662 | 26.5 |
| 18/12/80 | 10.4 | 0.1 | 1.2 | L 4 | 140 | 770 | 0.112 | 0.084 | 0.06 | 1.08 | 0.029 | 6.5 | 12.7 | 8.05 | 635 | 23.5 |
| MINIMUM | 6.4 | -0.5 | 0.8 | L 0 | 70 | 84 | 0.017 | 0.007 | 0.01 | 0.88 | 0.008 | 0.03 | 1.8 | 7.77 | 510 | 17 |
| GEO.MEAN | 10.8 | 6.4 | 1.5 | L 5 | 387 | 466 | 0.069 | 0.028 | 0.028 | 1.11 | 0.023 | 1.1 | 4.9 | 8.03 | 628 | 28.5 |
| ARI.MEAN | 11.2 | 10.6 | 1.6 | L25 | 750 | 643 | 0.083 | 0.036 | 0.04 | 1.12 | 0.029 | 2.97 | 6.5 | 8.03 | 632 | 29.8 |
| MAXIMUM | 15.8 | 21.1 | 2.6 | G88 | 3300 | 1500 | 0.182 | 0.084 | 0.14 | 1.58 | 0.114 | 14.2 | 19.5 | 8.28 | 775 | 47.5 |
| ROUTINE MONITORING DATA FOR 1981 | | | | | | | | | | | | | | | | |
| 12/ 1/81 | - | 0 | 0.6 | L 4 | 550 | 260 | 0.142 | 0.063 | 0.45 | 1.3 | 0.02 | 2.08 | 6.6 | 7.54 | 720 | 26.5 |
| 21/ 1/81 | 10.5 | 0.5 | 2.8 | 4 | 830 | G 1500 | 0.101 | 0.034 | 0.805 | 1.76 | 0.023 | 2.03 | 7.5 | 7.61 | 810 | 55.5 |
| 12/ 2/81 | 10.5 | 0.5 | 2.8 | 8 | 2200 | 960 | 0.14 | 0.087 | 0.605 | 1.6 | 0.036 | 6.2 | 11.9 | 7.45 | 600 | 34 |
| 17/ 2/81 | 11 | 0.5 | 3.2 | 40 | 1500 | G16000 | 0.122 | 0.054 | 0.565 | 1.86 | 0.031 | 6.27 | 17.4 | 7.47 | 530 | 28.5 |
| 25/ 2/81 | 9.5 | 0 | 1.4 | L 4 | A 500 | 2100 | 0.112 | 0.039 | 0.07 | 1.38 | 0.035 | 5.3 | 37.9 | 7.78 | 414 | 13.5 |
| 4/ 3/81 | 9.4 | 0.5 | 0.4 | L 4 | 860 | A 80 | 0.05 | 0.026 | 0.07 | 1.12 | 0.016 | 5.5 | 6.3 | 7.86 | 650 | 39.5 |
| 19/ 3/81 | 14.8 | 0 | 0.6 | L 4 | A 50 | 92 | 0.056 | 0.042 | 0.03 | 1.12 | 0.012 | 4.99 | 4 | 7.82 | 630 | 18.5 |
| 31/ 3/81 | 12.6 | 7.5 | 0.2 | 8 | 490 | 3900 | 0.088 | 0.025 | 0.02 | 1.2 | 0.019 | 8 | 22.1 | 7.86 | 570 | 22 |
| 14/ 4/81 | 11.2 | 8 | 2.1 | 12 | G1500 | 6200 | 0.135 | 0.045 | 0.075 | 1.1 | 0.026 | 2.8 | 27.3 | 7.97 | 610 | 50 |
| 27/ 4/81 | 17.4 | 12.5 | 1.6 | 4 | 100 | L 10 | 0.036 | 0.005 | 0.01 | 1.14 | 0.014 | 2.69 | 4 | 8.35 | 605 | 18 |
| 13/ 5/81 | 14.8 | 10 | 1 | L 4 | 376 | 68 | 0.04 | 0.02 | 0.005 | 1.32 | 0.021 | 5.3 | 3 | 8.2 | 620 | 16 |
| 9/ 6/81 | 10.4 | 20.8 | - | L 4 | G 500 | 255 | 0.1 | 0.026 | 0.04 | 1.3 | 0.034 | 0.2 | 9.4 | 8.04 | 510 | 22 |
| 6/ 7/81 | 10.8 | 24 | 2.3 | 8 | 930 | 580 | 0.098 | 0.01 | 0.03 | 1.36 | 0.044 | 0.31 | 8.8 | 8.04 | 515 | 23 |
| 4/ 8/81 | 11.4 | 24 | - | L 4 | 460 | 140 | 0.148 | 0.054 | 0.045 | 1.52 | 0.008 | 0.02 | 7 | 8.14 | 615 | 50 |
| MINIMUM | 9.4 | 0 | 0.2 | L 4 | 50 | 10 | 0.036 | 0.005 | 0.005 | 1.1 | 0.008 | 0.02 | 3 | 7.45 | 414 | 13.5 |
| GEO.MEAN | 11.7 | 4.1 | 1.2 | 6 | 564 | G 477 | 0.089 | 0.031 | 0.07 | 1.34 | 0.022 | 1.92 | 9.4 | 7.86 | 593 | 27.1 |
| ARI.MEAN | 11.9 | 7.8 | 1.6 | 8 | 796 | 2296 | 0.098 | 0.038 | 0.201 | 1.36 | 0.024 | 3.69 | 12.4 | 7.87 | 600 | 29.8 |
| MAXIMUM | 17.4 | 24 | 3.2 | 40 | 2200 | G16000 | 0.148 | 0.087 | 0.805 | 1.86 | 0.044 | 8 | 37.9 | 8.35 | 810 | 55.5 |

NOTES: L = LESS THAN, G = GREATER THAN, A = APPROXIMATELY.
MEANS ARE BASED ON RECORDED VALUES INCLUDING THOSE MARKED L,
G OR A. THEY MUST THEREFORE BE INTERPRETED WITH SOME CAUTION.

## ROUTINE MONITORING DATA AT STATION 5, LAKE VICTORIA AT THE ROMEO ST BRIDGE, STRATFORD

| DATE | D.O. | TEMP | BOD5 | PSEU. AERUG. | FECAL COL. | FECAL STREP. | TOT. PHO. | SOL. PHO. | FREE AMM. | TKN | NIT-RITE | NIT-RATE | SUS. SOL. | PH | COND. UMHOS | CHLORIDE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | MG/L | °C | MG/L | --- BACTERIA/100 ML --- |  |  | -------- | -------- | -------- | MG/L | -------- | -------- | -------- | UNITS | /CM | MG/L |
| ROUTINE MONITORING DATA FOR 1980 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 7/ 5/80 | 11.5 | 10 | 1.3 | L 4 | 2200 | 292 | 0.058 | 0.012 | 0.07 | 0.92 | 0.032 | 2.78 | 9 | 8.04 | 585 | 17 |
| 21/ 5/80 | 10.4 | 12 | 1.2 | L 4 | G 1500 | G 500 | 0.058 | 0.013 | 0.195 | 1.12 | 0.033 | 4.32 | 4 | 8.02 | 650 | 21 |
| 2/ 6/80 | 5.7 | 12.6 | 2.9 | 40 | 12000 | 4700 | 0.112 | 0.031 | 0.245 | 1.21 | 0.073 | 3 | 25 | 7.9 | 590 | 18.5 |
| 30/ 6/80 | 9.1 | 19.8 | 9.4 | L 4 | 192 | 32 | 0.28 | 0.014 | 0.235 | 2.5 | 0.081 | 1.61 | 15 | 7.94 | 550 | 22 |
| 15/ 7/80 | 9 | 24.2 | 5 | L 4 | 180 | 180 | 0.133 | 0.002 | 0.055 | 1.35 | 0.047 | 0.68 | 12.3 | 8.15 | 580 | 24.5 |
| 12/ 8/80 | 6.8 | 20.8 | 3.6 | 128 | 13300 | 500 | 0.134 | 0.071 | 0.175 | 0.86 | 0.069 | 1.43 | 14.4 | 7.91 | 510 | 20 |
| 25/ 8/80 | 11.8 | 25.9 | 3.5 | L 4 | L 100 | L 10 | 0.054 | 0.002 | 0.005 | 1.08 | 0.024 | 0.55 | 10.8 | 8.36 | 560 | 24 |
| 11/ 9/80 | 7.8 | 15.8 | 3.4 | 4 | 130 | 72 | 0.056 | 0.002 | 0.165 | 0.97 | 0.057 | 1.21 | 5.5 | 8.03 | 640 | 24 |
| 22/ 9/80 | 8 | 18 | 3.6 | L 4 | 140 | A 10 | 0.108 | 0.003 | 0.1 | 1.36 | 0.041 | 1.21 | 6.1 | 8.05 | 600 | 23.5 |
| 9/10/80 | 11.4 | 11 | 2 | L 4 | 130 | 60 | 0.04 | 0.013 | 0.065 | 0.7 | 0.028 | 1.75 | 3.6 | 8.11 | 670 | 21.5 |
| 20/10/80 | 14.3 | 7 | 3.2 | 4 | 300 | 350 | 0.056 | 0.022 | 0.055 | 1.04 | 0.04 | 3.7 | 5.6 | 8.01 | 700 | 28 |
| 6/11/80 | 12 | 5.5 | 1.6 | 8 | A 60 | 490 | 0.048 | 0.015 | 0.42 | 1.02 | 0.063 | 2.39 | 9.8 | 8.01 | 760 | 36 |
| 19/11/80 | 13.2 | 3 | 2 | 4 | 128 | 300 | 0.4 | 0.345 | 0.045 | 0.9 | 0.03 | 10.6 | 2 | 7.69 | 1750 | 220 |
| 3/12/80 | 13.8 | -0.5 | 2 | 12 | G 600 | G 500 | 0.148 | 0.057 | 0.285 | 1.42 | 0.053 | 10.8 | 22.8 | 7.91 | 880 | 55.5 |
| 18/12/80 | 13.4 | 1.1 | 2 | 4 | 120 | 400 | 0.06 | 0.022 | 0.635 | 1.3 | 0.058 | 4.9 | 27.4 | 7.94 | 680 | 32 |
| MINIMUM | 5.7 | -0.5 | 1.2 | L 4 | 60 | 10 | 0.04 | 0.002 | 0.005 | 0.7 | 0.024 | 0.55 | 2 | 7.69 | 510 | 17 |
| GEO.MEAN | 10.2 | 10.3 | 2.7 | L 7 | G 389 | G 190 | 0.091 | 0.014 | 0.115 | 1.13 | 0.046 | 2.35 | 9 | 8 | 679 | 29.2 |
| ARI.MEAN | 10.5 | 12.4 | 3.1 | 15 | 2072 | 580 | 0.116 | 0.042 | 0.183 | 1.18 | 0.049 | 3.4 | 11.6 | 8 | 714 | 39.8 |
| MAXIMUM | 14.3 | 25.9 | 9.4 | L128 | 13300 | 4700 | 0.4 | 0.345 | 0.635 | 2.5 | 0.081 | 10.8 | 27.4 | 8.36 | 1750 | 220 |
| ROUTINE MONITORING DATA FOR 1981 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12/ 1/81 | - | 0 | 0.5 | L 4 | 364 | 244 | 0.052 | 0.029 | 0.58 | 1.06 | 0.031 | 2.87 | 9 | 7.68 | 700 | 24 |
| 21/ 1/81 | 12.8 | 1 | 1.6 | L 4 | 136 | 88 | 0.061 | 0.022 | 1.32 | 1.92 | 0.026 | 2.67 | 7.2 | 7.85 | 830 | 38.5 |
| 12/ 2/81 | 12.6 | 0 | 3.5 | 12 | 532 | G 500 | 0.155 | 0.077 | 1.4 | 2.35 | 0.066 | 3.7 | 16 | 7.48 | 750 | 51 |
| 17/ 2/81 | 11.4 | 2 | 5.2 | L 4 | 1270 | G 1500 | 0.185 | 0.089 | 1 | 2.25 | 0.035 | 3.51 | 36.3 | 7.53 | 660 | 63.5 |
| 25/ 2/81 | 10.4 | 0.5 | 2 | 4 | 300 | 1300 | 0.106 | 0.037 | 0.135 | 1.38 | 0.035 | 5.7 | 34.9 | 7.73 | 442 | 15 |
| 4/ 3/81 | 12 | 0.5 | 0.4 | A 80 | A 300 | A 100 | 0.05 | 0.026 | 0.175 | 0.98 | 0.023 | 5.4 | 8.4 | 7.85 | 620 | 22 |
| 19/ 3/81 | 15 | 1.5 | 0.7 | L 4 | A 10 | A 10 | 0.036 | 0.018 | 0.295 | 1.04 | 0.017 | 4.78 | 4.5 | 8.01 | 710 | 29.5 |
| 31/ 3/81 | 10.6 | 6.5 | 2 | 4 | 1300 | 1150 | 0.156 | 0.058 | 0.115 | 1.42 | 0.031 | 7.5 | 39.1 | 7.82 | 550 | 19.5 |
| 14/ 4/81 | 8.8 | 8 | 3 | 68 | 5000 | G15600 | 0.165 | 0.061 | 0.205 | 1.3 | 0.039 | 3.2 | 29.2 | 7.92 | 550 | 26 |
| 27/ 4/81 | 12 | 11 | 1.4 | L 4 | A 50 | L 10 | 0.038 | 0.004 | 0.085 | 0.98 | 0.029 | 3.27 | 4.5 | 8.12 | 635 | 21.5 |
| 13/ 5/81 | 13.3 | 8.5 | 1.1 | L 4 | 130 | 132 | 0.034 | 0.007 | 0.08 | 1.16 | 0.03 | 5.6 | 4.1 | 8.08 | 650 | 21.5 |
| 9/ 6/81 | 9.9 | 18.5 | - | 196 | 310 | 84 | 0.078 | 0.009 | 0.37 | 1.18 | 0.06 | 1.21 | 12.4 | 7.98 | 650 | 21.5 |
| 6/ 7/81 | 7.7 | 21.6 | 3 | 4 | 100 | 52 | 0.06 | 0.001 | 0.025 | 1.14 | 0.082 | 3.47 | 3.3 | 8.08 | 600 | 24.5 |
| 4/ 8/81 | 11 | 25.5 | - | 12 | A 10 | A 30 | 0.136 | 0.004 | 0.185 | 1.88 | 0.034 | 0.64 | 17.2 | 7.96 | 481 | 27.5 |
| MINIMUM | 7.7 | 0 | 0.4 | L 4 | 10 | 10 | 0.034 | 0.001 | 0.025 | 0.98 | 0.017 | 0.64 | 3.3 | 7.48 | 442 | 15 |
| GEO.MEAN | 11.2 | 4.3 | 1.6 | L 9 | 216 | 190 | 0.079 | 0.018 | 0.24 | 1.37 | 0.035 | 3.29 | 11.5 | 7.86 | 622 | 26.8 |
| ARI.MEAN | 11.3 | 7.5 | 2 | 29 | 702 | G 1493 | 0.094 | 0.032 | 0.426 | 1.43 | 0.038 | 3.82 | 16.2 | 7.86 | 631 | 29 |
| MAXIMUM | 15 | 25.5 | 5.2 | L196 | 5000 | G15600 | 0.185 | 0.089 | 1.4 | 2.35 | 0.082 | 7.5 | 39.1 | 8.12 | 830 | 53.5 |

NOTES: L = LESS THAN, G = GREATER THAN, A = APPROXIMATELY.
MEANS ARE BASED ON RECORDED VALUES INCLUDING THOSE MARKED L, G OR A. THEY MUST THEREFORE BE INTERPRETED WITH SOME CAUTION.

ROUTINE MONITORING DATA AT STATION 5, AVON RIVER AT THE JOHN ST BRIDGE, STRATFORD

| DATE | D.O. | TEMP | BOD5 | PSEU. APUG. | FECAL COL. | FECAL STREP. | TOT. PHO. | SOL. PHO. | FREE AMM. | TKN | NIT-RITE | NIT-RATE | SUS. SOL. | PH | COND. UMHOS /CM | CHLOR-IDE MG/L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | MG/L | oC | MG/L | --- BACTERIA/100 ML --- |  |  | ---------- | | | MG/L | ---------- | | | UNITS |  |  |
| ROUTINE MONITORING DATA FOR 1980 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 7/ 5/80 | 10.4 | 13 | 1.7 | 188 | 176 | 44 | 0.111 | 0.029 | 0.045 | 0.96 | 0.031 | 2.82 | 9.5 | 8.13 | 635 | 19.5 |
| 21/ 5/80 | 9.8 | 13.2 | 2 | L 4 | 248 | 452 | 0.136 | 0.057 | 0.195 | 1.34 | 0.054 | 5.45 | 18 | 8 | 545 | 17.5 |
| 2/ 6/80 | 7.2 | 16.8 | 3.9 | 12 | 292 | 256 | 0.086 | 0.002 | 0.07 | 1.16 | 0.052 | 2 | 17 | 8.37 | 590 | 22 |
| 30/ 6/80 | 8.9 | 15.6 | 3.8 | 24 | 510 | 240 | 0.104 | 0.001 | 0.075 | 1.04 | 0.053 | 0.89 | 16 | 7.91 | 550 | 27.5 |
| 15/ 7/80 | 7.7 | 23 | 5.6 | 152 | G1500 | 1100 | 0.111 | 0.002 | L0.005 | 1.19 | 0.033 | 0.47 | 11.5 | 7.89 | 660 | 29 |
| 12/ 8/80 | 7.7 | 20.5 | 5.8 | 208 | 880 | G1500 | 0.068 | 0.003 | 0.13 | 1.32 | 0.036 | 0.37 | 15.3 | 8.17 | 540 | 24 |
| 25/ 8/80 | 9.3 | 23.5 | 4 | L 4 | A 80 | 76 | 0.099 | 0.001 | 0.005 | 1.3 | 0.001 | L 0.01 | 13.7 | 8.28 | 650 | 25 |
| 11/ 9/80 | 8.2 | 18.5 | 3.6 | 4 | 60 | 32 | 0.1 | 0.001 | 0.215 | 1.2 | 0.016 | 0.11 | 10.8 | 7.82 | 795 | 30 |
| 22/ 9/80 | 4.6 | 19.5 | 7.6 | L 4 | A 50 | 150 | 0.114 | 0.002 | 0.01 | 1.54 | 0.006 | 0.38 | 5.1 | 8.3 | 630 | 29 |
| 9/10/80 | 10.8 | 11.5 | 2.8 | 4 | 8 | 190 | 0.034 | 0.001 | 0.055 | 0.45 | 0.035 | 0.96 | 10.1 | 8.11 | 640 | 28.5 |
| 20/10/80 | 14.5 | 7.5 | 3.1 | 4 | 32 | A 30 | 0.054 | 0.002 | 0.1 | 0.9 | 0.03 | 1.18 | 9.8 | 7.99 | 640 | 28.5 |
| 6/11/80 | 9.6 | 5.5 | 1.7 | L 4 | 12 | 260 | 0.044 | 0.008 | 0.15 | 0.88 | 0.04 | 3.51 | 7.2 | 8.03 | 775 | 31 |
| 19/11/80 | 9.7 | 4.6 | 2.1 | 4 | 320 | A 70 | 0.074 | 0.007 | 0.375 | 1.07 | 0.027 | 2.62 | 24.3 | 7.99 | 880 | 33 |
| 3/12/80 | 14.4 | 0 | 2.8 | L 4 | G1500 | G 500 | 0.144 | 0.037 | 0.23 | 1.96 | 0.05 | 12 | 168.6 | 7.83 | 693 | 33.5 |
| 18/12/80 | 14.7 | 1.1 | 0.8 | L 4 | 120 | 370 | 0.08 | 0.02 | 0.105 | 0.8 | 0.031 | 4.6 | 31.8 | 7.94 | 840 | 43.5 |
| MINIMUM | 4.6 | 0 | 0.8 | 4 | 8 | 30 | 0.034 | 0.001 | 0.005 | 0.45 | 0.001 | 0.01 | 5.1 | 7.82 | 540 | 17.5 |
| GEO.MEAN | 9.4 | 11.1 | 3 | L 10 | 148 | 191 | 0.085 | 0.004 | 0.067 | 1.09 | 0.025 | 1.01 | 15.3 | 8.05 | 653 | 27.4 |
| ARI.MEAN | 9.8 | 12.9 | 3.4 | 42 | 386 | 358 | 0.091 | 0.012 | 0.118 | 1.14 | 0.033 | 2.49 | 24.6 | 8.05 | 671 | 28.1 |
| MAXIMUM | 14.7 | 23.5 | 7.6 | 208 | 1500 | 1500 | 0.144 | 0.057 | 0.375 | 1.96 | 0.054 | 12 | 168.6 | 8.37 | 880 | 43.5 |
| ROUTINE MONITORING DATA FOR 1981 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12/ 1/81 | - | 0 | 0.7 | 8 | 230 | 150 | 0.074 | 0.028 | 0.21 | 0.9 | 0.018 | 2.53 | 14 | 7.7 | 800 | 25.5 |
| 21/ 1/81 | 9.8 | 2 | 1.7 | L 4 | 180 | 150 | 0.06 | 0.021 | 0.26 | 0.72 | 0.018 | 2.38 | 6.2 | 7.84 | 790 | 27 |
| 17/ 2/81 | 11.8 | 1 | 5.6 | 8 | 1240 | G1500 | 0.2 | 0.081 | 0.66 | 1.92 | 0.045 | 2.86 | 58.7 | 7.59 | 800 | 115 |
| 25/ 2/81 | 11.4 | 0.5 | - | L 4 | 250 | 1700 | 0.11 | 0.037 | 0.13 | 1.36 | 0.036 | 5.7 | 40.8 | 7.75 | 470 | 20.5 |
| 4/ 3/81 | 9.4 | 2 | 0.6 | L 4 | 150 | 110 | 0.054 | 0.027 | 0.18 | 0.98 | 0.027 | 5.4 | 11.4 | 7.93 | 820 | 80.5 |
| 19/ 3/81 | 13.6 | 3 | 2.1 | L 4 | G1500 | 16 | 0.046 | 0.012 | 0.125 | 0.96 | 0.019 | 4.13 | 11.2 | 8.03 | 910 | 78 |
| 31/ 3/81 | 8.4 | 8 | 2.6 | 16 | 1900 | 1180 | 0.22 | 0.052 | 0.185 | 1.52 | 0.04 | 6.7 | 63.8 | 7.81 | 570 | 26 |
| 14/ 4/81 | 11.4 | 10 | 2.9 | 36 | 310 | 1200 | 0.222 | 0.099 | 0.21 | 1.22 | 0.038 | 2.7 | 40.9 | 8.18 | 630 | 37 |
| 27/ 4/81 | 12.2 | 8.5 | 2 | L 4 | L 10 | A 40 | 0.063 | 0.003 | 0.09 | 1.28 | 0.028 | 3.17 | 11.2 | 8.16 | 615 | 25.5 |
| 13/ 5/81 | 11.8 | 11 | 2 | 4 | 350 | 100 | 0.062 | 0.004 | 0.085 | 1.02 | 0.044 | 3.2 | 12.8 | 8.1 | 620 | 24 |
| 9/ 6/81 | 8.8 | 19.2 | 3.7 | 16 | 990 | 324 | 0.086 | 0.004 | 0.01 | 1 | 0.048 | 1.38 | 10.5 | 8.04 | 685 | 27 |
| 6/ 7/81 | 8 | 22.5 | 2.5 | L 4 | 250 | 570 | 0.048 | 0.001 | 0.15 | 1.46 | 0.112 | 6.24 | 7 | 8.06 | 680 | 30 |
| 4/ 8/81 | 10 | 23.2 | 3.4 | L 4 | 230 | 100 | 0.074 | L0.001 | 0.02 | 1 | 0.034 | 0.97 | 12.2 | 8.01 | 590 | 30 |
| MINIMUM | 8 | 0 | 0.6 | 4 | 10 | 16 | 0.046 | 0.001 | 0.01 | 0.72 | 0.018 | 0.97 | 6.2 | 7.59 | 470 | 20.5 |
| GEO.MEAN | 10.4 | 5.3 | 2.1 | L 7 | 318 | 243 | 0.086 | 0.012 | 0.119 | 1.14 | 0.034 | 3.18 | 16.9 | 7.94 | 680 | 35.6 |
| ARI.MEAN | 10.6 | 8.5 | 2.5 | 9 | 584 | G 549 | 0.101 | 0.028 | 0.178 | 1.18 | 0.039 | 3.64 | 23.1 | 7.94 | 691 | 42 |
| MAXIMUM | 13.6 | 23.2 | 5.6 | L36 | 1900 | 1700 | 0.222 | 0.099 | 0.66 | 1.92 | 0.112 | 6.7 | 63.8 | 8.18 | 910 | 115 |

NOTES: L = LESS THAN, G = GREATER THAN, A = APPROXIMATELY.
MEANS ARE BASED ON RECORDED VALUES INCLUDING THOSE MARKED L,
G OR A. THEY MUST THEREFORE BE INTERPRETED WITH SOME CAUTION.

ROUTINE MONITORING DATA AT STATION STP, EFFLUENT AT THE WPCP OUTFALL IN STRATFORD

| DATE | D.O. | TEMP | BOD5 | PSEU. ARUG. | FECAL COL. | FECAL STREP. | TOT. PHO. | SOL. PHO. | FREE AMM. | TKN | NIT-RITE | NIT-RATE | SUS. SOL. | PH | COND. UMHOS /CM | CHLOR-IDE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MG/L | OC | MG/L | --- BACTERIA/100 ML --- | | | ----- | ----- | ----- MG/L | ----- | ----- | ----- | ----- | UNITS | | MG/L |
| ROUTINE MONITORING DATA FOR 1980 | | | | | | | | | | | | | | | | |
| 7/ 5/80 | 13.2 | 11 | 3.2 | L 4 | L 4 | 88 | 0.6 | 0.315 | 10.6 | 11.2 | 0.34 | 3.66 | 5.5 | 7.65 | 1760 | 255 |
| 21/ 5/80 | 9.9 | 11.9 | 3.2 | L 4 | 4 | 56 | 0.296 | 0.126 | 0.8 | 1.95 | 0.195 | 8.4 | L0.5 | 7.71 | 1280 | 142.5 |
| 2/ 6/80 | 9.4 | 15 | 1.6 | L 4 | 16 | 156 | 0.5 | 0.2 | 0.13 | 0.7 | 0.031 | 10.1 | 5 | 7.67 | 1380 | 195 |
| 30/ 6/80 | 10.3 | 15.1 | 4.4 | L 4 | 4 | L 4 | 0.053 | 0.023 | 0.06 | 0.66 | 0.007 | 15.1 | 2 | 7.54 | 1650 | 125 |
| 15/ 7/80 | 9.4 | 18 | 1.6 | L 4 | 35 | 20 | 0.52 | 0.4 | 0.05 | 0.79 | 0.01 | 14.9 | 1 | 7.58 | 1740 | 215 |
| 12/ 8/80 | 9 | 19.8 | 4 | 36 | 100 | A 200 | 0.148 | 0.097 | 0.035 | 0.7 | 0.004 | 8.3 | 0.7 | 7.62 | 1390 | 205 |
| 25/ 8/80 | 6.8 | 20.2 | 1.2 | L 4 | 284 | 76 | 0.55 | 0.24 | 0.04 | 1.2 | 0.005 | 14.1 | 3.6 | 7.39 | 1820 | 234 |
| 22/ 9/80 | 5.8 | 20 | 1.6 | L 4 | 4 | 36 | 0.21 | 0.094 | 0.155 | 1.9 | 0.028 | 13.5 | 2.6 | 7.61 | 1850 | 250 |
| 9/10/80 | 10.4 | 17 | 1.4 | L 4 | 24 | 296 | 0.2 | 0.099 | 0.66 | 2.05 | 0.092 | 13.5 | 1.3 | 7.79 | 1750 | 205 |
| 20/10/80 | 13.3 | 15 | 1.3 | 16 | 8 | 108 | 0.185 | 0.089 | 0.035 | 1.95 | 0.002 | 12.3 | 1 | 7.74 | 1610 | 395 |
| 6/11/80 | 10.4 | 14 | 1.6 | L 4 | 4 | 412 | 0.264 | 0.2 | 0.135 | 0.9 | 0.006 | 13.8 | 2.7 | 7.75 | 1670 | 202 |
| 19/11/80 | 10.4 | 13 | 1.4 | 4 | G 500 | 530 | 0.044 | 0.015 | 0.565 | 1.12 | 0.025 | 3.33 | 8.8 | 8.05 | 825 | 41 |
| 3/12/80 | 12.6 | 9.9 | 0.8 | 36 | G41000 | G1500 | 0.275 | 0.193 | 0.53 | 0.95 | 0.41 | 9.8 | 1.6 | 7.73 | 1520 | 228 |
| 18/12/80 | 11.5 | 10.7 | 0.2 | 4 | A 1000 | 400 | 0.248 | 0.134 | 0.09 | 0.95 | 0.29 | 11.4 | 4.1 | 7.66 | 1650 | 208 |
| MINIMUM | 5.8 | 9.9 | 0.2 | L 4 | L 4 | 4 | 0.044 | 0.015 | 0.035 | 0.66 | 0.002 | 3.33 | 0.5 | 7.39 | 825 | 41 |
| GEO.MEAN | 9.9 | 14.7 | 1.6 | L 6 | 43 | 121 | 0.234 | 0.119 | 0.186 | 1.32 | 0.029 | 9.96 | L2.1 | 7.68 | 1536 | 188.7 |
| ARI.MEAN | 10.2 | 15 | 2 | L 9 | 3078 | 277 | 0.293 | 0.159 | 0.992 | 1.93 | 0.103 | 10.87 | 2.9 | 7.68 | 1564 | 207.2 |
| MAXIMUM | 13.3 | 20.2 | 4.4 | L36 | 41000 | L1500 | 0.6 | 0.4 | 10.6 | 11.2 | 0.41 | 15.1 | 8.8 | 8.05 | 1850 | 395 |
| ROUTINE MONITORING DATA FOR 1981 | | | | | | | | | | | | | | | | |
| 12/ 1/81 | - | - | 1 | L 4 | 2300 | 380 | 2.7 | 2.42 | 0.875 | 3.25 | 1.08 | 18.1 | 3.2 | 7.46 | 1850 | 260 |
| 21/ 1/81 | - | - | 3 | L 4 | 9200 | 1500 | 0.82 | 0.49 | 3.3 | 8.1 | 1.38 | 11 | 1.2 | 7.52 | 1850 | 205 |
| 12/ 2/81 | - | - | 2.3 | 12 | 6100 | 4400 | 0.54 | 0.36 | 2.6 | 3.55 | 0.335 | 7.8 | 2.7 | 7.53 | 1600 | 255 |
| 17/ 2/81 | 9.4 | 8 | 29 | G500 | G 150000 | G 46600 | 2.75 | 0.99 | 6.3 | 10 | 0.27 | 3.1 | 30.8 | 7.27 | 1490 | 252 |
| 25/ 2/81 | 9.8 | 6 | 4.4 | L 4 | 89000 | 21000 | 0.6 | 0.29 | 2.7 | 3.85 | 0.22 | 5.2 | 1.7 | 7.79 | 1490 | 220 |
| 4/ 3/81 | 9.6 | 7.5 | 1.2 | - | 100000 | A 10000 | 0.52 | 0.32 | 6.1 | 6.8 | 0.57 | 5.1 | 4.8 | 7.63 | 1770 | 270 |
| 19/ 3/81 | 9.3 | 7 | 14.6 | 264 | 240000 | 26000 | 0.85 | 0.36 | 6.05 | 7 | 1.08 | 10.2 | 9.6 | 7.45 | 2000 | 305 |
| 31/ 3/81 | - | - | 13.2 | - | - | - | 0.7 | 0.36 | 4 | 5.1 | 2.58 | 3.8 | 10.3 | 7.42 | 1500 | 215 |
| 14/ 4/81 | 6.6 | 10 | 21.6 | 720 | 1310000 | 136000 | 1.47 | 0.155 | 5.8 | 9.25 | 3.7 | 7.3 | 29.3 | 7.4 | 1170 | 165 |
| 27/ 4/81 | 10 | 9.5 | 40 | L 4 | 1600 | 10000 | 3.7 | 0.86 | 17.8 | 22.5 | 0.004 | 0.02 | 54.3 | 7.43 | 1640 | 210 |
| 13/ 5/81 | 10.6 | 12 | 6 | L 4 | 4100 | 1100 | 0.4 | 0.169 | 10.5 | 10.5 | 0.42 | 0.77 | 7 | 7.67 | 1620 | 202 |
| 9/ 6/81 | 8.9 | 16.5 | 5.7 | L 4 | A 10 | 110 | 0.25 | 0.089 | 5.45 | 6.7 | 0.63 | 9.5 | 3 | 7.54 | 1820 | 242 |
| 6/ 7/81 | 8.8 | 18.2 | 3.4 | L 4 | 8 | 4 | 0.052 | 0.009 | 0.31 | 1.25 | 0.091 | 15.4 | 0.1 | 7.42 | 1650 | 200 |
| 4/ 8/81 | 7.7 | 20 | 3 | L 4 | L 4 | 12 | 0.14 | 0.061 | 2.6 | 3.18 | 0.43 | 13.7 | 0.5 | 7.4 | 1820 | 280 |
| MINIMUM | 5.6 | 5 | 1 | L 4 | 4 | 4 | 0.052 | 0.009 | 0.31 | 1.26 | 0.004 | 0.02 | 0.1 | 7.27 | 1170 | 165 |
| GEO.MEAN | 9 | 10.6 | 5.9 | L 15 | 4165 | 1927 | 0.65 | 0.257 | 3.699 | 5.82 | 0.429 | 4.43 | 4.1 | 7.49 | 1649 | 231.4 |
| ARI.MEAN | 9.1 | 11.5 | 10.6 | 136 | 147102 | 19777 | 1.107 | 0.495 | 5.313 | 7.22 | 0.914 | 7.93 | 11.3 | 7.49 | 1662 | 234.4 |
| MAXIMUM | 10.6 | 20 | 40 | G720 | G1310000 | G136000 | 3.7 | 2.42 | 17.8 | 22.5 | 3.7 | 18.1 | 54.3 | 7.78 | 2000 | 305 |

NOTES: L = LESS THAN, G = GREATER THAN, A = APPROXIMATELY.
MEANS ARE BASED ON RECORDED VALUES INCLUDING THOSE MARKED L,
G OR A. THEY MUST THEREFORE BE INTERPRETED WITH SOME CAUTION.

ROUTINE MONITORING DATA AT STATION 7, AVON RIVER AT THE LORNE ST BRIDGE, STRATFORD

| DATE | D.O. | TEMP | BOD5 | PSEU. ARUG. | FECAL COL. | FECAL STREP. | TOT. PHO. | SOL. PHO. | FREE AMM. | TKN | NIT-RITE | NIT-RATE | SUS. SOL. | PH | COND. uMHOS /CM | CHLOR-IDE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | MG/L | oC | MG/L | --- BACTERIA/100 ML --- |  |  | -------------------- | | | MG/L | ------------------ | | | UNITS |  | MG/L |
| ROUTINE MONITORING DATA FOR 1980 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 7/ 5/80 | 11.4 | 11.9 | 4.2 | 128 | 316 | 16 | 0.173 | 0.101 | 2 | - | 0.27 | 3.13 | 12.5 | 8 | 910 | 72.5 |
| 21/ 5/80 | 11.4 | 14 | 2.4 | L 4 | 228 | 92 | 0.146 | 0.075 | 0.27 | 1.34 | 0.08 | 5.9 | 10 | [illegible] | 695 | 47 |
| 2/ 6/80 | [illegible] | 16 | 3.7 | 16 | G 600 | 252 | 0.236 | 0.105 | 0.2 | 1.17 | 0.083 | 5.6 | 15 | 8.08 | 790 | 59.5 |
| 30/ 6/80 | 8.9 | 14.2 | 2.1 | 12 | 228 | 204 | 0.08 | 0.018 | 0.07 | 0.79 | 0.056 | 6.4 | 6 | 7.97 | 920 | 84 |
| 15/ 7/80 | 13.9 | 22.5 | 4.2 | 72 | 1100 | G 600 | 0.28 | 0.146 | L0.005 | 1.08 | 0.051 | 4.6 | 13.7 | 8.2 | 1080 | 84 |
| 12/ 8/80 | 7.5 | 21.8 | 3.2 | 108 | 3500 | 350 | 0.11 | 0.002 | 0.095 | 1.16 | 0.055 | 2.2 | 8.4 | 8.02 | 740 | 62.5 |
| 25/ 8/80 | 15.4 | 24.2 | 1.2 | L 4 | 340 | A 50 | 0.206 | 0.129 | 0.04 | 0.98 | 0.008 | 7.49 | 6 | 8.46 | 1310 | 143 |
| 11/ 9/80 | 14.2 | 19 | 1.4 | 4 | 410 | 88 | 0.097 | 0.037 | 0.02 | 0.73 | 0.022 | 14.7 | 5 | 8.42 | 1270 | 138 |
| 22/ 9/80 | 5.8 | 20 | 2.2 | L 4 | 240 | 470 | 0.16 | 0.065 | 0.2 | 1.22 | 0.035 | 7.1 | 2.6 | 8.09 | 1350 | 145 |
| 9/10/80 | 11 | 14 | 2 | L 4 | A 40 | 80 | 0.126 | 0.055 | 0.5 | 1.34 | 0.27 | 6.5 | 3.4 | 7.74 | 1210 | 122 |
| 20/10/80 | 16.1 | 10.5 | 2.2 | 4 | 104 | 104 | 0.09 | 0.043 | 0.05 | 0.94 | 0.037 | 6.1 | 5 | 7.96 | 980 | 82 |
| 6/11/80 | 12.4 | 6.5 | 1.2 | L 4 | 40 | 304 | 0.11 | 0.075 | 0.055 | 0.68 | 0.047 | 6.8 | 4.7 | 7.97 | 1040 | 81 |
| 19/11/80 | 10 | 6 | 1 | L 4 | G 500 | 204 | 0.175 | 0.141 | 0.18 | 0.71 | 0.088 | 6.9 | 3.9 | 7.97 | 1170 | 94 |
| 3/12/80 | 16.6 | 0.3 | 2.9 | L 4 | 9300 | G1500 | 0.25 | 0.058 | 0.16 | 1.48 | 0.066 | 13.1 | 94.1 | 7.87 | 740 | 49.5 |
| 18/12/80 | 15.4 | 2.2 | 0.5 | L 4 | 350 | 270 | 0.116 | 0.065 | 0.12 | 0.92 | 0.199 | 7.2 | 12.4 | 7.93 | 1040 | 78 |
| MINIMUM | 5.8 | 0.3 | 0.5 | 4 | 40 | 16 | 0.08 | 0.002 | 0.005 | 0.68 | 0.008 | 2.2 | 2.6 | 7.74 | 695 | 47 |
| GEO.MEAN | 11.3 | 9.7 | 2 | L 9 | 376 | 180 | 0.146 | 0.055 | 0.107 | 1.01 | 0.063 | 6.27 | 8 | 8.05 | 994 | 84.2 |
| ARI.MEAN | 11.8 | 13.5 | 2.3 | 25 | G1166 | 306 | 0.157 | 0.074 | 0.264 | 1.04 | 0.091 | 6.91 | 13.5 | 8.05 | 1016 | 89.5 |
| MAXIMUM | 16.6 | 24.2 | 4.2 | 128 | 9300 | 1500 | 0.28 | 0.146 | 2 | 1.48 | 0.27 | 14.7 | 94.1 | 8.46 | 1350 | 145 |
| ROUTINE MONITORING DATA FOR 1981 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12/ 1/81 | - | 0 | 1.3 | L 4 | 510 | 150 | 1.28 | 1.18 | 0.455 | 4.25 | 0.5 | 10.3 | 8.9 | 7.74 | 1250 | 138 |
| 21/ 1/81 | 12.9 | 4.5 | 2 | 8 | G 1500 | 560 | 0.42 | 0.255 | 1.7 | 3.8 | 0.63 | 6.7 | 2.4 | 7.76 | 1270 | 112 |
| 12/ 2/81 | 13.8 | 3 | 5.7 | 20 | 4300 | 380 | 0.31 | 0.165 | 1.2 | 1.3 | 0.27 | 4.5 | 35 | 7.6 | 1010 | 122 |
| 17/ 2/81 | 11.8 | 3.5 | 10.8 | 200 | 123000 | 14700 | 0.62 | 0.3 | 1.9 | 4.2 | 0.089 | 2.9 | 68.9 | 7.44 | 950 | 142 |
| 25/ 2/81 | 11.6 | 1 | 2.2 | L 4 | 4400 | 4400 | 0.138 | 0.056 | 0.295 | 1.56 | 0.045 | 5.5 | 37.2 | 7.79 | 530 | 34 |
| 4/ 3/81 | 11.1 | 3 | 0.4 | 12 | A 7000 | A 1000 | 0.158 | 0.107 | 1 | 1.98 | 0.088 | 5.5 | 115.1 | 7.85 | 870 | 77 |
| 19/ 3/81 | 13.9 | 6 | 2.2 | 24 | G 1500 | 1310 | 0.16 | 0.121 | 1.3 | 2.16 | 0.22 | 6.2 | 7.8 | 8.09 | 1070 | 108 |
| 31/ 3/81 | - | - | 3.6 | 20 | 3600 | 1310 | 0.242 | 0.086 | 0.375 | 1.78 | 0.177 | 6.4 | 62.5 | 7.84 | 590 | 34 |
| 14/ 4/81 | 9.6 | 10 | 11.2 | 248 | G 70000 | 13700 | 0.665 | 0.325 | G1 | 3.6 | 0.98 | 0.71 | 60.4 | 7.51 | 700 | 82.5 |
| 27/ 4/81 | 13.4 | 11 | 11.6 | 12 | A 200 | G 1500 | 1.35 | 0.415 | 4.7 | 7.75 | 0.196 | 2.65 | 27.1 | 7.73 | 905 | 72 |
| 13/ 5/81 | 11.4 | 13.3 | 3.6 | L 4 | 280 | A 80 | 0.13 | 0.049 | 1.9 | 3.16 | 0.186 | 2.6 | 8.9 | 8.03 | 825 | 58.5 |
| 9/ 6/81 | 11.6 | 20.2 | 5.2 | L 4 | 720 | 150 | 0.15 | 0.035 | 1.4 | 2.78 | 0.96 | 5.2 | 9.8 | 7.85 | 1160 | 115 |
| 6/ 7/81 | 13.4 | 23.4 | 2.2 | L 4 | 180 | 110 | 0.072 | 0.002 | 0.055 | 1.12 | 0.148 | 9.75 | 5.3 | 8.2 | 1080 | 100 |
| 4/ 8/81 | 10.6 | 23 | 3.8 | 4 | 270 | 270 | 0.098 | 0.014 | 0.705 | 1.72 | 0.68 | 6.12 | 4.9 | 7.76 | 1200 | 148 |
| MINIMUM | 9.6 | 0 | 0.4 | L 4 | 180 | 80 | 0.072 | 0.002 | 0.055 | 1.12 | 0.045 | 0.71 | 2.4 | 7.44 | 530 | 34 |
| GEO.MEAN | 12 | 7 | 3.4 | 12 | G 1920 | 774 | 0.27 | 0.096 | 0.861 | 2.55 | 0.251 | 4.55 | 18.1 | 7.8 | 927 | 87.4 |
| ARI.MEAN | 12.1 | 9.4 | 4.7 | 41 | 15533 | 2831 | 0.414 | 0.222 | 1.285 | 2.94 | 0.369 | 5.36 | 32.4 | 7.8 | 958 | 95.9 |
| MAXIMUM | 13.9 | 23.4 | 11.6 | 248 | 123000 | 14700 | 1.35 | 1.18 | 4.7 | 7.75 | 0.98 | 10.3 | 115.1 | 8.2 | 1270 | 148 |

NOTES: L = LESS THAN, G = GREATER THAN, A = APPROXIMATELY.
MEANS ARE BASED ON RECORDED VALUES INCLUDING THOSE MARKED L,
G OR A. THEY MUST THEREFORE BE INTERPRETED WITH SOME CAUTION.

ROUTINE MONITORING DATA AT STATION 7A, ROADHOUSE DRAIN, LOT 7, CONC. III, DOWNIE TWP.

| DATE | D.O. | TEMP | BOD5 | PSEU. ARUG. | FECAL COL. | FECAL STREP. | TOT. PHO. | SOL. PHO. | FREE AMM. | TKN | NIT-RITE | NIT-RATE | SUS. SOL. | PH | COND. | CHLOR-IDE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | MG/L | oC | MG/L | --- BACTERIA/100 ML --- |  |  | MG/L |  |  |  |  |  |  | UNITS | UMHOS /CM | MG/L |
| ROUTINE MONITORING DATA FOR 1980 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 21/ 5/80 | 15.9 | 15 | 1.4 | L 4 | 160 | G 500 | 0.032 | 0.005 | 0.005 | 0.5 | 0.023 | 7.88 | L 0.5 | 8.45 | 515 | 29.5 |
| 2/ 5/80 | 7.9 | 15 | 1.8 | 12 | G 500 | G 500 | 0.04 | 0.021 | 0.025 | 0.63 | 0.035 | 4.3 | 5.5 | 8.03 | 620 | 49.5 |
| 30/ 5/80 | 10.1 | 16.5 | 1.6 | 4 | 1280 | 720 | 0.068 | 0.04 | 0.035 | 0.62 | 0.047 | 4.5 | 4.5 | 8.09 | 650 | 37.5 |
| 15/ 7/80 | 11.2 | 22 | 2.4 | 348 | G 1500 | G1500 | 0.075 | 0.01 | 0.035 | 0.8 | 0.048 | 2.2 | 6.7 | 8.23 | 800 | 27 |
| 12/ 8/80 | 7.4 | 19.8 | 1.5 | 312 | 14000 | 4200 | 0.136 | 0.089 | 0.08 | 0.74 | 0.031 | 2.3 | 18.4 | 7.84 | 468 | 28 |
| 25/ 8/80 | 11.3 | 20.5 | 0.7 | L 4 | 8000 | 1700 | 0.066 | 0.026 | 0.015 | 0.5 | 0.019 | 2.28 | 2.7 | 8.3 | 840 | 20.5 |
| 11/ 9/80 | 10.2 | 15 | 0.1 | L 4 | 410 | 1800 | 0.056 | 0.021 | 0.015 | 0.53 | 0.011 | 1.87 | 5.4 | 8.12 | 815 | 16.5 |
| 22/ 9/80 | - | - | 1 | L 4 | 2100 | 1600 | 0.07 | 0.033 | 0.015 | 0.52 | 0.033 | 1.66 | 8.1 | 8.29 | 845 | 25.5 |
| 9/10/80 | 14.2 | 9 | 1.9 | - | - | - | 0.08 | 0.013 | 0.015 | 1.12 | 0.015 | 2.1 | 5.1 | 8.07 | 825 | 53.5 |
| 20/10/80 | 15 | 8 | 1.2 | 4 | 550 | G1500 | 0.104 | 0.077 | 0.03 | 0.74 | 0.073 | 5.6 | 0.9 | 7.98 | 825 | 45.5 |
| 6/11/80 | 12.4 | 5 | 0.1 | 4 | 240 | 2700 | 0.046 | 0.028 | 0.035 | 0.43 | 0.048 | 5.45 | 1.3 | 7.94 | 805 | 48 |
| 19/11/80 | 11.8 | 2.8 | 1.3 | L 4 | 640 | 210 | 0.585 | 0.535 | 0.005 | 0.6 | 0.039 | 6.06 | 3 | 7.94 | 840 | 54 |
| 3/12/80 | 13.9 | 1.5 | 1.9 | L 4 | 1450 | G1500 | 0.091 | 0.04 | 0.005 | 0.77 | 0.038 | 14.5 | 12.5 | 7.8 | 690 | 35 |
| 18/12/80 | 14.2 | 1 | 0.5 | L 4 | 160 | 380 | 0.036 | 0.016 | 0.035 | 0.7 | 0.024 | 9.3 | 11.4 | 8.1 | 770 | 44 |
| MINIMUM | 7.4 | 1 | 0.1 | L 4 | 160 | G 210 | 0.032 | 0.005 | 0.005 | 0.43 | 0.011 | 1.66 | L 0.5 | 7.8 | 468 | 16.5 |
| GEO.MEAN | 11.7 | 8.2 | 0.9 | 9 | G 922 | G1110 | 0.075 | 0.031 | 0.019 | 0.64 | 0.031 | 4.07 | 4.2 | 8.08 | 735 | 34.6 |
| ARI.MEAN | 12 | 11.6 | 1.2 | 55 | 2392 | 1462 | 0.106 | 0.058 | 0.025 | 0.66 | 0.035 | 5.07 | 6.2 | 8.08 | 744 | 36.7 |
| MAXIMUM | 15.9 | 22 | 2.4 | 348 | G14000 | G4200 | 0.585 | 0.535 | 0.08 | 1.12 | 0.073 | 14.5 | 18.4 | 8.45 | 845 | 54 |
| ROUTINE MONITORING DATA FOR 1981 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12/ 1/81 | - | 0 | 0.5 | L 4 | 52 | G 600 | 0.042 | 0.019 | 0.205 | 1.02 | 0.03 | 6.8 | 7.4 | 7.82 | 830 | 45.5 |
| 21/ 1/81 | 12.2 | 0 | 1.6 | L 4 | 76 | 112 | 0.146 | 0.1 | 0.235 | 0.62 | 0.039 | 5.9 | 3.8 | 7.78 | 1070 | 128 |
| 17/ 2/81 | 11.8 | 0.5 | G15 | L 4 | G17400 | G62000 | 1.55 | 1.02 | 2.35 | 7.2 | 0.03 | 6.1 | 61.6 | 7.23 | 750 | 94 |
| 25/ 2/81 | 11.3 | 1 | 2.4 | L 4 | 1000 | 23000 | 0.134 | 0.07 | 0.115 | 1.34 | 0.064 | 8.2 | 11.6 | 7.77 | 510 | 28.5 |
| 4/ 3/81 | 8.4 | 2 | 0.5 | L 4 | A 30 | A 80 | 0.038 | 0.025 | 0.06 | 0.82 | 0.019 | 8.9 | 15.9 | 7.93 | 710 | 54.5 |
| 19/ 3/81 | 15 | 2 | 1.1 | L 4 | 36 | 88 | 0.038 | 0.018 | 0.085 | 0.88 | 0.03 | 8.7 | 9.1 | 8.07 | 730 | 58 |
| 31/ 3/81 | - | - | 2.8 | L 4 | A 50 | 440 | 0.072 | 0.022 | 0.03 | 1.02 | 0.022 | 9 | 14.7 | 8.03 | 590 | 30.5 |
| 14/ 4/81 | 13.2 | 10 | 2.8 | 32 | G 600 | G 1500 | 0.174 | 0.094 | 0.17 | 1.16 | 0.028 | 5.22 | 20.6 | 7.91 | 590 | 44 |
| 27/ 4/81 | 14.9 | 12 | 1.3 | L 4 | 32 | L 10 | 0.042 | 0.006 | 0.02 | 0.98 | 0.036 | 7.16 | 6.9 | 8.2 | 700 | 40.5 |
| 13/ 5/81 | 13 | 13 | 1 | L 4 | 188 | 308 | 0.03 | 0.008 | 0.025 | 0.88 | 0.038 | 8.7 | 4.1 | 8.29 | 675 | 36 |
| 9/ 6/81 | 10.6 | 21.4 | 2.5 | L 4 | 1330 | 560 | 0.066 | 0.019 | 0.055 | 1.14 | 0.121 | 4.6 | 3.3 | 8.02 | 625 | 43 |
| 6/ 7/81 | 12 | 24.2 | 0.9 | 4 | 860 | G 1500 | 0.07 | 0.041 | 0.01 | 0.9 | 0.05 | 5.85 | 0.5 | 8.24 | 720 | 38 |
| 4/ 8/81 | 10.5 | 21.5 | 1.3 | L 4 | 3500 | 4300 | 0.326 | 0.22 | 0.02 | 0.8 | 0.028 | 4.1 | 2.1 | 8.08 | 875 | 33 |
| MINIMUM | 8.4 | 0 | 0.5 | L 4 | 30 | G 10 | 0.03 | 0.006 | 0.01 | 0.62 | 0.019 | 4.1 | 0.5 | 7.23 | 510 | 28.5 |
| GEO.MEAN | 11.9 | 5.7 | 1.6 | L 5 | 280 | 665 | 0.094 | 0.041 | 0.074 | 1.11 | 0.036 | 6.65 | 5.9 | 7.95 | 709 | 46.8 |
| ARI.MEAN | 12.1 | 9 | G 2.6 | L 6 | G 1936 | G 7269 | 0.21 | 0.128 | 0.26 | 1.44 | 0.041 | 6.85 | 12.4 | 7.95 | 721 | 51.8 |
| MAXIMUM | 15 | 24.2 | 15 | L32 | 17400 | 62000 | 1.55 | 1.02 | 2.35 | 7.2 | 0.121 | 9 | 61.6 | 8.29 | 1070 | 128 |

NOTES: L = LESS THAN, G = GREATER THAN, A = APPROXIMATELY.
MEANS ARE BASED ON RECORDED VALUES INCLUDING THOSE MARKED L,
G OR A. THEY MUST THEREFORE BE INTERPRETED WITH SOME CAUTION.

ROUTINE MONITORING DATA AT STATION 8, AVON RIVER AT COUNTY ROAD 22, DOWNIE TWP.

| DATE | D.O.<br>MG/L | TEMP<br>°C | BOD5<br>MG/L | PSEU. ARUG.<br>--- BACTERIA/100 ML --- | FECAL COL. | FECAL STREP. | TOT. PHO.<br>--------------------- MG/L --------------------- | SOL. PHO. | FREE AMM. | TKN | NIT-RITE | NIT-RATE | SUS. SOL. | PH<br>UNITS | COND. UMHOS /CM | CHLORIDE MG/L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROUTINE MONITORING DATA FOR 1980 | | | | | | | | | | | | | | | | |
| 7/ 5/80 | 14.4 | 10.5 | 3.2 | L 4 | 112 | 92 | 0.183 | 0.089 | 1.32 | 1.44 | 0.48 | 3.12 | 10.5 | 8.25 | 785 | 45 |
| 21/ 5/80 | 12.4 | 16.5 | 2.6 | L 4 | 184 | 32 | 0.166 | 0.092 | 0.195 | 1.34 | 0.106 | 6.34 | 10 | 8.28 | 645 | 34 |
| 2/ 6/80 | 8.1 | 17 | 2.9 | L 4 | G 500 | 312 | 0.18 | 0.116 | 0.205 | 1.18 | 0.191 | 4.6 | 13 | 8.25 | 720 | 46.5 |
| 30/ 6/80 | 14.2 | 18.4 | 2.5 | L 4 | 230 | 92 | 0.07 | 0.024 | 0.015 | 0.78 | 0.059 | 3.4 | 5 | 8.63 | 740 | 62.5 |
| 15/ 7/80 | 17.2 | 24.8 | 4.5 | L 4 | 500 | 188 | 0.105 | 0.007 | 0.01 | 1.08 | 0.184 | 4.8 | 12 | 8.57 | 1180 | 132 |
| 12/ 8/80 | 8.2 | 21.4 | 3.4 | 136 | G1500 | 1400 | 0.11 | 0.003 | 0.095 | 0.86 | 0.056 | 1.48 | 13.7 | 8.01 | 610 | 43 |
| 25/ 8/80 | 16.8 | 25.9 | 1.8 | L 4 | 910 | A 50 | 0.126 | 0.053 | 0.015 | 0.84 | 0.04 | 5.4 | 31.8 | 8.65 | 1230 | 145 |
| 11/ 9/80 | 15.8 | 20 | 0.6 | L 4 | 310 | 72 | 0.07 | 0.011 | 0.02 | 0.79 | 0.058 | 6.9 | 2.4 | 8.39 | 1350 | 162 |
| 22/ 9/80 | - | - | 0.8 | L 4 | 390 | 690 | 0.06 | 0.017 | 0.07 | 0.84 | 0.155 | 11 | 3.5 | 8.63 | 1260 | 150 |
| 9/10/80 | G20 | 11 | 1.2 | L 4 | A 50 | 120 | 0.07 | 0.028 | 0.175 | 1.16 | 0.77 | 5.3 | 1.5 | 8.38 | 1160 | 130 |
| 20/10/80 | G20 | 8.5 | 2 | L 4 | 40 | 56 | 0.08 | 0.043 | 0.005 | 0.94 | 0.077 | 4.9 | 3.9 | 8.23 | 835 | 60.5 |
| 6/11/80 | 15.8 | 4.5 | 1.4 | L 4 | 20 | 240 | 0.094 | 0.07 | 0.015 | 0.53 | 0.048 | 6.6 | 5 | 8.21 | 1020 | 84.5 |
| 19/11/80 | 15.2 | 3.8 | 1.7 | L 4 | 340 | 44 | 0.224 | 0.187 | 0.05 | 0.61 | 0.119 | 5.73 | 4.6 | 8.2 | 1050 | 77.5 |
| 3/12/80 | 15.8 | 0 | 3.1 | 20 | G1500 | G 500 | 0.18 | 0.075 | 0.145 | 1.32 | 0.051 | 12.8 | 38.4 | 7.92 | 718 | 42 |
| 18/12/80 | 16 | 0.4 | 1.8 | L 4 | 190 | 260 | 0.096 | 0.059 | 0.28 | 1.04 | 0.29 | 6.3 | 13.9 | 8.08 | 985 | 69 |
| MINIMUM | 8.1 | 0 | 0.6 | L 4 | 20 | 32 | 0.06 | 0.003 | 0.005 | 0.53 | 0.04 | 1.48 | 1.5 | 7.92 | 610 | 34 |
| GEO.MEAN | 14.5 | 10 | 2 | L 6 | 250 | 153 | 0.111 | 0.037 | 0.06 | 0.94 | 0.117 | 5.29 | 7.7 | 8.31 | 922 | 75.1 |
| ARI.MEAN | 15 | 13.1 | 2.2 | L 14 | G 458 | 283 | 0.121 | 0.058 | 0.174 | 0.98 | 0.179 | 5.91 | 11.3 | 8.31 | 953 | 85.6 |
| MAXIMUM | 20 | 25.9 | 4.5 | L136 | 1500 | 1400 | 0.224 | 0.187 | 1.32 | 1.44 | 0.77 | 12.8 | 38.4 | 8.65 | 1350 | 162 |
| ROUTINE MONITORING DATA FOR 1981 | | | | | | | | | | | | | | | | |
| 12/ 1/81 | - | 0 | 1.1 | L 4 | L 10 | 156 | 0.88 | 0.88 | 0.715 | 1.4 | 0.29 | 7.4 | 3.8 | 7.76 | 1100 | 108 |
| 21/ 1/81 | 11.6 | 0 | 3.1 | L 4 | 890 | 280 | 0.425 | 0.27 | 2.5 | 4.15 | 0.26 | 4.5 | 8.3 | 7.82 | 1180 | 101 |
| 12/ 2/81 | 12.2 | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 17/ 2/81 | - | - | 5.6 | 60 | G35500 | 9200 | 0.505 | 0.285 | 1.45 | 3.1 | 0.093 | 3.66 | 48.7 | 7.57 | 890 | 135 |
| 25/ 2/81 | 11.4 | 1 | 2.4 | L 4 | 1900 | 5000 | 0.13 | 0.062 | 0.23 | 1.34 | 0.047 | 6 | 27.2 | 7.8 | 510 | 29 |
| 4/ 3/81 | 11.4 | 2.5 | 1.2 | 4 | A 2000 | A 700 | 0.104 | 0.074 | 0.9 | 1.88 | 0.075 | 6 | 8.9 | 7.98 | 750 | 48.5 |
| 19/ 3/81 | - | - | 4.3 | L 4 | 1900 | 1420 | 0.15 | 0.092 | 1.05 | 2.12 | 0.114 | 6 | 7.1 | 8.28 | 880 | 73 |
| 31/ 3/81 | - | - | 3.4 | 32 | 2900 | 1040 | 0.224 | 0.083 | 0.295 | 1.62 | 0.2 | 6.9 | 55.8 | 7.85 | 610 | 38 |
| 14/ 4/81 | 11.2 | 9.5 | 5.6 | 20 | 6100 | 14600 | 0.365 | 0.19 | G1 | 2.3 | 0.03 | 4.8 | 44.3 | 7.87 | 620 | 51.5 |
| 27/ 4/81 | 14.4 | 10.5 | 5.8 | 12 | 1600 | 700 | 0.344 | 0.185 | 1.23 | 3.08 | 0.166 | 4.03 | 12.4 | 8.01 | 750 | 45.5 |
| 13/ 5/81 | 14.2 | 13.9 | 4.4 | L 4 | 160 | L 10 | 0.094 | 0.034 | 0.85 | 2.04 | 0.31 | 4.2 | 6 | 8.22 | 760 | 46 |
| 9/ 6/81 | 17.5 | 22.7 | 4.1 | L 4 | 220 | 36 | 0.134 | 0.02 | 0.035 | 1.42 | 0.29 | 4.1 | 12.1 | 8.46 | 940 | 83 |
| 6/ 7/81 | 16.3 | 25.9 | 2.6 | L 4 | 260 | 60 | 0.08 | 0.005 | 0.015 | 1.22 | 0.185 | 7.6 | 8.6 | 8.43 | 910 | 84 |
| 4/ 8/81 | 14 | 25 | 3.6 | 4 | 920 | 130 | 0.078 | L0.001 | 0.24 | 1.62 | 0.27 | 5.13 | 10.5 | 8.24 | 1170 | 125 |
| MINIMUM | 11.2 | 0 | 1.1 | L 4 | L 10 | 10 | 0.078 | 0.001 | 0.015 | 1.22 | 0.03 | 3.65 | 3.8 | 7.57 | 510 | 29 |
| GEO.MEAN | 13.3 | 8.1 | 3.3 | L 7 | 954 | 473 | 0.201 | 0.064 | 0.438 | 1.96 | 0.145 | 5.26 | 13.6 | 8.02 | 826 | 68 |
| ARI.MEAN | 13.4 | 10.4 | 3.7 | 12 | 4182 | 2564 | 0.27 | 0.158 | 0.808 | 2.1 | 0.179 | 5.41 | 19.5 | 8.02 | 852 | 75.3 |
| MAXIMUM | 17.5 | 25.9 | 6.6 | 60 | G35500 | 14600 | 0.88 | 0.88 | 2.5 | 4.15 | 0.31 | 7.6 | 55.8 | 8.46 | 1180 | 135 |

NOTES: L = LESS THAN, G = GREATER THAN, A = APPROXIMATELY.
MEANS ARE BASED ON RECORDED VALUES INCLUDING THOSE MARKED L,
G OR A. THEY MUST THEREFORE BE INTERPRETED WITH SOME CAUTION.

ROUTINE MONITORING DATA AT STATION 9, AVON RIVER AT COUNTY ROAD 23, DOWNIE TWP.

| DATE | D.O.<br>MG/L | TEMP<br>°C | BOD5<br>MG/L | PSEU. AERUG. | FECAL COL. | FECAL STREP. | TOT. PHO. | SOL. PHO. | FREE AMM. | TKN | NITRITE | NITRATE | SUS. SOL. | PH<br>UNITS | COND. UMHOS /CM | CHLORIDE<br>MG/L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | --- BACTERIA/100 ML | | --- | ---------- | ---------- | ---------- | MG/L | ---------- | ---------- | ---------- | | | |
| ROUTINE MONITORING DATA FOR 1980 | | | | | | | | | | | | | | | | |
| 7/ 5/80 | 15.6 | 9.8 | 3.2 | L 4 | 156 | 20 | 0.135 | 0.057 | 0.575 | 1.41 | 0.5 | 3 | 14.5 | 8.44 | 730 | 41 |
| 21/ 5/80 | 16.5 | 16 | 2.3 | L 4 | 80 | 35 | 0.158 | 0.066 | 0.1 | 1.3 | 0.106 | 5.89 | 8 | 8.55 | 615 | 29.5 |
| 2/ 6/80 | 8.4 | 17.5 | 3.3 | 8 | 1010 | 316 | 0.178 | 0.101 | 0.175 | 1.22 | 0.146 | 4.1 | 13.5 | 8.2 | 680 | 41 |
| 30/ 6/80 | 8.2 | 14.5 | 1.6 | L 4 | 280 | 88 | 0.073 | 0.033 | 0.025 | 0.73 | 0.062 | 3.5 | 3.5 | 8.22 | 790 | 72 |
| 15/ 7/80 | 10.2 | 26 | 1.9 | 24 | G 1500 | 176 | 0.066 | 0.007 | 0.04 | 0.84 | 0.101 | 5.7 | 4.6 | 8.3 | 1170 | 138 |
| 12/ 8/80 | 7.8 | 21.4 | 4 | 140 | 13200 | 2000 | 0.176 | 0.004 | 0.13 | 1.14 | 0.086 | 1.47 | 26.9 | 7.95 | 590 | 42.5 |
| 25/ 8/80 | 15.2 | 27.9 | 2.2 | 4 | A 300 | A 10 | 0.09 | 0.018 | 0.015 | 1.02 | 0.024 | 3.38 | 7.4 | 8.7 | 1170 | 125 |
| 11/ 9/80 | 10.6 | 20 | 0.9 | 16 | A 70 | 140 | 0.054 | 0.006 | 0.02 | 0.74 | 0.014 | 5.5 | 27.1 | 8.59 | 1220 | 140 |
| 22/ 9/80 | - | - | 1 | L 4 | 170 | 600 | 0.038 | 0.005 | 0.005 | 1 | 0.022 | 4.6 | 35.4 | 8.5 | 1200 | 138 |
| 9/10/80 | G20 | 11 | 1 | L 4 | 150 | A 50 | 0.046 | 0.012 | 0.02 | 0.84 | 0.52 | 6 | 1.1 | 8.49 | 1200 | 125 |
| 20/10/80 | G20 | 8.5 | 1.8 | 52 | 120 | 60 | 0.072 | 0.038 | 0.005 | 0.78 | 0.12 | 5.73 | 2 | 8.26 | 875 | 58.5 |
| 6/11/80 | 14.4 | 3 | 1.3 | 48 | 8 | 288 | 0.097 | 0.055 | 0.02 | 0.59 | 0.088 | 6.8 | 2.8 | 8.23 | 1050 | 93 |
| 19/11/80 | 15.2 | 3 | 1.1 | L 4 | 312 | 35 | 0.177 | 0.152 | 0.07 | 0.64 | 0.25 | 6.7 | 3.3 | 8.27 | 1150 | 98 |
| 3/12/80 | 15.4 | -1 | 2.7 | 4 | G 1500 | G 600 | 0.204 | 0.074 | 0.13 | 1.4 | 0.053 | 13 | 42.8 | 7.93 | 680 | 35 |
| 18/12/80 | 13.9 | -0.1 | 0.8 | L 4 | 400 | 260 | 0.11 | 0.073 | 0.53 | 1.2 | 0.34 | 6.7 | 13.3 | 8.14 | 1050 | 86 |
| MINIMUM | 7.8 | -1 | 0.8 | L 4 | 8 | 10 | 0.038 | 0.004 | 0.005 | 0.59 | 0.014 | 1.47 | 1.1 | 7.93 | 590 | 29.5 |
| GEO.MEAN | 13.1 | 12.2 | 1.7 | L 9 | 285 | 125 | 0.098 | 0.028 | 0.048 | 0.95 | 0.098 | 4.93 | 8.2 | 8.32 | 914 | 74.4 |
| ART.MEAN | 13.7 | 12.7 | 1.9 | 22 | 1284 | 312 | 0.112 | 0.047 | 0.124 | 0.99 | 0.162 | 5.47 | 13.7 | 8.32 | 945 | 84.8 |
| MAXIMUM | 20 | 27.9 | 4 | L140 | 13200 | 2000 | 0.204 | 0.152 | 0.575 | 1.41 | 0.52 | 13 | 42.8 | 8.7 | 1220 | 140 |
| ROUTINE MONITORING DATA FOR 1981 | | | | | | | | | | | | | | | | |
| 12/ 1/81 | - | 0 | 0.7 | L 4 | 290 | 150 | 0.67 | 0.55 | 0.625 | 1.5 | 0.2 | 8 | 2.3 | 7.72 | 1150 | 120 |
| 21/ 1/81 | 9.8 | 0 | 2.4 | L 4 | G1500 | 310 | 0.485 | 0.41 | 2.4 | 3.7 | 0.21 | 5.8 | 3.3 | 7.76 | 1230 | 120 |
| 25/ 2/81 | 12 | 0 | 2.2 | L 4 | G1500 | 4000 | 0.13 | 0.06 | [illegible] | 1.22 | 0.051 | 5.3 | [illegible] | 7.84 | 490 | 26 |
| 4/ 3/81 | 10.2 | 3 | 1.1 | L 4 | 2100 | 340 | 0.104 | 0.076 | 0.64 | 1.52 | 0.061 | 6 | 8.8 | 8.01 | 700 | 39 |
| 19/ 3/81 | - | - | 1.2 | L 4 | A 30 | A 10 | 0.095 | 0.053 | 0.56 | 1.46 | 0.085 | 5.76 | 3.3 | 8.27 | 930 | 83.5 |
| 31/ 3/81 | - | - | 2.6 | 16 | 140 | 920 | 0.228 | 0.088 | 0.34 | 1.76 | 0.166 | 6.9 | 51.3 | 7.86 | 590 | 32.5 |
| 14/ 4/81 | 9.8 | 9.5 | 8 | 108 | G1500 | G1500 | 0.38 | 0.215 | G1 | 2.45 | 0.17 | 4.13 | 51.1 | 7.85 | 590 | 53 |
| 27/ 4/81 | 16.6 | 10 | 4.2 | 8 | 1480 | 830 | 0.262 | 0.148 | 1.05 | 2.7 | 0.168 | 4.18 | 6.8 | 8.13 | 760 | 49 |
| 13/ 5/81 | 17 | 14 | 3.1 | L 4 | 160 | A 10 | 0.098 | 0.028 | 0.25 | 1.32 | 0.163 | 4.2 | 8.6 | 8.5 | 690 | 39 |
| 9/ 6/81 | 15.5 | 23.2 | 4.7 | L 4 | 530 | 32 | 0.11 | 0.024 | 0.755 | 1.86 | 0.6 | 4.4 | 7.6 | 8.29 | 1170 | 130 |
| 6/ 7/81 | 14.4 | 27.3 | 2.4 | L 4 | 100 | 92 | 0.082 | 0.009 | 0.015 | 1.22 | 0.158 | 6.7 | 5.4 | 8.46 | 970 | 99.5 |
| 4/ 8/81 | 12.2 | 26.5 | 1.6 | 4 | 200 | 116 | 0.08 | 0.023 | 0.05 | 0.92 | 0.028 | 4.27 | 3.9 | 8.4 | 1070 | 120 |
| MINIMUM | 9.8 | 0 | 0.7 | L 4 | 30 | 10 | 0.08 | 0.009 | 0.015 | 0.92 | 0.028 | 4.13 | 2.3 | 7.72 | 490 | 26 |
| GEO.MEAN | 12.8 | 13.1 | 2.3 | L 5 | G 409 | 192 | 0.172 | 0.074 | 0.368 | 1.68 | 0.13 | 5.42 | 8.5 | 8.09 | 825 | 55.7 |
| ART.MEAN | 13.1 | 11.4 | 2.9 | L 14 | G 794 | 693 | 0.227 | 0.141 | 0.655 | 1.81 | 0.172 | 5.55 | 14.9 | 8.09 | 862 | 76 |
| MAXIMUM | 17 | 27.3 | 8 | L108 | 2100 | 4000 | 0.67 | 0.55 | 2.4 | 3.7 | 0.6 | 8 | 51.3 | 8.5 | 1230 | 130 |

NOTES: L = LESS THAN, G = GREATER THAN, A = APPROXIMATELY.
MEANS ARE BASED ON RECORDED VALUES INCLUDING THOSE MARKED L,
G OR A. THEY MUST THEREFORE BE INTERPRETED WITH SOME CAUTION.

ROUTINE MONITORING DATA AT STATION 10, AVON RIVER AT COUNTY ROAD 17, DOWNIE TWP.

| DATE | D.O. MG/L | TEMP °C | BOD5 MG/L | PSEU. AERUG. | FECAL COL. | FECAL STREP. | TOT. PHO. | SOL. PHO. | FREE AMM. | TKN | NIT-RITE | NIT-RATE | SUS. SOL. | PH | COND. uMHOS /CM | CHLOR-IDE MG/L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | --- BACTERIA/100 ML --- | | | --- | --- | --- | MG/L | --- | --- | --- | UNITS | | |
| ROUTINE MONITORING DATA FOR 1980 | | | | | | | | | | | | | | | | |
| 7/ 5/80 | 17.3 | 9.5 | 1.9 | L 4 | 48 | 16 | 0.091 | 0.038 | 0.23 | 1.26 | 0.545 | 3.01 | 4 | 8.54 | 730 | 45 |
| 21/ 5/80 | 18.9 | 17 | 2.1 | L 4 | 112 | 44 | 0.116 | 0.035 | 0.02 | 1.14 | 0.07 | 5.33 | 9 | 8.77 | 575 | 27 |
| 2/ 6/80 | 9.4 | 18 | 3.1 | 8 | 580 | 156 | 0.171 | 0.109 | 0.13 | 1.04 | 1.146 | 4.2 | 14 | 8.32 | 710 | 47.5 |
| 30/ 6/80 | 9.1 | 17.5 | 1.9 | L 4 | 450 | 108 | 0.089 | 0.031 | 0.035 | 0.77 | 0.058 | 3.3 | 11.5 | 8.06 | 800 | 68 |
| 15/ 7/80 | 13.6 | 26 | 1.1 | L 4 | 310 | 56 | 0.055 | 0.002 | 0.02 | 0.84 | 0.054 | 3 | 9.1 | 8.78 | 1020 | 135 |
| 12/ 8/80 | 7.8 | 21.5 | 4.3 | 180 | 14100 | 1900 | 0.218 | 0.053 | 0.32 | 1.2 | 0.097 | 1.44 | 22.1 | 7.83 | 510 | 39.5 |
| 25/ 8/80 | 16.6 | 28 | 2.2 | L 4 | A 300 | 210 | 0.088 | 0.005 | 0.01 | 1.12 | 0.031 | 2.87 | 9.9 | 8.7 | 1180 | 140 |
| 11/ 9/80 | 13.8 | 20 | 1.2 | L 4 | 340 | 120 | 0.055 | 0.009 | 0.025 | 0.74 | 0.016 | 4.5 | 7.1 | 8.44 | 1260 | 152 |
| 22/ 9/80 | - | - | 1.4 | L 4 | 300 | 376 | 0.064 | 0.004 | 0.02 | 0.96 | 0.033 | 3.6 | 13.3 | 8.62 | 1200 | 150 |
| 9/10/80 | G20 | 12 | 1.8 | L 4 | G 0 | 190 | 0.144 | 0.004 | 0.025 | 1.34 | 0.25 | 5 | 37.2 | 8.46 | 1040 | 91.5 |
| 20/10/80 | G20 | 8.5 | 1.6 | 8 | 110 | 160 | 0.06 | 0.034 | 0.005 | 0.72 | 0.091 | 5.56 | 1.1 | 8.36 | 870 | 70 |
| 5/11/80 | 15 | 2 | 0.8 | 16 | 8 | 120 | 0.045 | 0.025 | 0.005 | 0.53 | 0.033 | 5.7 | 4.1 | 8.14 | 1010 | 81 |
| 19/11/80 | 15.8 | 3 | 2.2 | L 4 | 320 | 144 | 0.178 | 0.094 | 0.04 | 0.84 | 0.153 | 6.7 | 5.3 | 8.42 | 1120 | 96 |
| 3/12/80 | 14.8 | -0.5 | 2.7 | 4 | G 1500 | G 500 | 0.182 | 0.081 | 0.165 | 1.38 | 0.058 | 13 | 34.9 | 7.97 | 670 | 33.5 |
| 18/12/80 | 14.4 | 0 | 1.2 | L 4 | 250 | 2600 | 0.162 | 0.104 | 0.255 | 0.98 | 0.18 | 7 | 8.1 | 8.04 | 1020 | 79.5 |
| MINIMUM | 7.8 | -0.5 | 0.8 | L 4 | 0 | 16 | 0.045 | 0.002 | 0.005 | 0.53 | 0.016 | 1.44 | 1.1 | 7.83 | 510 | 27 |
| GEO.MEAN | 14.2 | 12.1 | 1.8 | L 6 | 110 | 185 | 0.101 | 0.023 | 0.039 | 0.96 | 0.091 | 4.39 | 9.2 | 8.36 | 883 | 73 |
| ART.MEAN | 14.8 | 13 | 2 | 17 | 1249 | 453 | 0.115 | 0.042 | 0.087 | 0.99 | 0.188 | 4.95 | 12.7 | 8.36 | 914 | 83.7 |
| MAXIMUM | 20 | 28 | 4.3 | L180 | 14100 | 2600 | 0.218 | 0.109 | 0.32 | 1.38 | 1.146 | 13 | 37.2 | 8.78 | 1260 | 152 |
| ROUTINE MONITORING DATA FOR 1981 | | | | | | | | | | | | | | | | |
| 12/ 1/81 | - | 0 | 0.4 | L 4 | A 30 | A 20 | 0.202 | 0.172 | 0.39 | 1.02 | 0.095 | 7.9 | 2.6 | 7.83 | 1120 | 108 |
| 21/ 1/81 | 9.8 | 0 | 1.1 | L 4 | 408 | 160 | 0.5 | 0.44 | 0.975 | 1.44 | 0.171 | 6.8 | 2.8 | 7.75 | 1180 | 110 |
| 25/ 2/81 | 12.4 | 0 | 2.5 | 4 | G1500 | 3600 | 0.142 | 0.062 | 0.21 | 1.36 | 0.051 | 6.2 | 25.7 | 7.84 | 476 | 22.5 |
| 4/ 3/81 | 13.2 | 2 | 1.3 | L 4 | 2000 | 260 | 0.088 | 0.063 | 0.65 | 1.46 | 0.051 | 6.2 | 8.3 | 8.03 | 700 | 40.5 |
| 19/ 3/81 | - | - | 1.1 | L 4 | A 40 | L 10 | 0.084 | 0.065 | 0.795 | 1.54 | 0.088 | 5.99 | 3.5 | 8.23 | 1030 | 115 |
| 31/ 3/81 | - | - | 3.5 | 12 | 920 | 432 | 0.22 | 0.085 | 0.305 | 1.62 | 0.137 | 6.9 | 51.7 | 7.92 | 570 | 30.5 |
| 14/ 4/81 | 11.6 | 9.5 | 6.8 | 128 | G1500 | 1180 | 0.345 | 0.195 | G1 | 2.35 | 0.172 | 3.83 | 44.6 | 7.83 | 590 | 50.5 |
| 27/ 4/81 | 17.2 | 10 | 5.1 | 24 | G1500 | 750 | 0.318 | 0.205 | 1.08 | 2.62 | 0.178 | 4.15 | 8.4 | 8.08 | 780 | 54.5 |
| 13/ 5/81 | 16.4 | 14.7 | 2.8 | L 4 | 110 | L 10 | 0.124 | 0.025 | 0.12 | 1.32 | 0.135 | 4.6 | 5.6 | 8.55 | 585 | 39.5 |
| 9/ 6/81 | 14.2 | 24.1 | 2.4 | L 4 | 420 | 16 | 0.098 | 0.038 | 0.05 | 1.12 | 0.24 | 5.5 | 5.8 | 8.56 | 1120 | 122 |
| 6/ 7/81 | 13.7 | 28.5 | 2.5 | 4 | 270 | 40 | 0.105 | 0.021 | 0.035 | 1.3 | 0.076 | 5.6 | 7.6 | 8.46 | 900 | 84.5 |
| 4/ 8/81 | 13 | 26.5 | 1.5 | L 4 | 180 | 112 | 0.092 | 0.02 | 0.035 | 1.02 | 0.035 | 3.07 | 10.4 | 8.4 | 1020 | 125 |
| MINIMUM | 9.8 | 0 | 0.4 | L 4 | A 40 | A 10 | 0.084 | 0.02 | 0.035 | 1.02 | 0.035 | 3.07 | 2.6 | 7.75 | 476 | 22.5 |
| GEO.MEAN | 13.3 | 12.6 | 2 | L 7 | 403 | 119 | 0.161 | 0.074 | 0.26 | 1.45 | 0.103 | 5.38 | 9 | 8.12 | 813 | 64.6 |
| ART.MEAN | 13.5 | 11.5 | 2.6 | 17 | G 744 | 549 | 0.193 | 0.116 | 0.47 | 1.51 | 0.119 | 5.56 | 14.8 | 8.12 | 848 | 75.2 |
| MAXIMUM | 17.2 | 28.5 | 6.8 | L128 | 2000 | 3600 | 0.5 | 0.44 | 1.08 | 2.62 | 0.24 | 7.9 | 51.7 | 8.56 | 1180 | 125 |

NOTES: L = LESS THAN, G = GREATER THAN, A = APPROXIMATELY.
MEANS ARE BASED ON RECORDED VALUES INCLUDING THOSE MARKED L, G OR A. THEY MUST THEREFORE BE INTERPRETED WITH SOME CAUTION.

## ROUTINE MONITORING DATA AT STATION 11, AVON RIVER, LOT 19, CONC. X, DOWNIE TWP.(AVONBANK)

| DATE | D.O. MG/L | TEMP °C | BOD5 MG/L | PSEU. AERUG. | FECAL COL. | FECAL STREP. | TOT. PHO. | SOL. PHO. | FREE AMM. | TKN | NIT-RITE | NIT-RATE | SUS. SOL. | PH UNITS | COND. UMHOS /CM | CHLOR-IDE MG/L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  | --- BACTERIA/100 ML --- |  |  | ---------------------- | | | MG/L | ---------------------- |  |  |  |  |  |
| ROUTINE MONITORING DATA FOR 1980 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 7/ 5/80 | 15.2 | 9.5 | 1.7 | L 4 | 32 | 4 | 0.063 | 0.016 | 0.095 | 0.92 | 0.43 | 3.37 | 2.5 | 8.48 | 750 | 50 |
| 21/ 5/80 | 16.8 | 17.2 | 2 | L 4 | 92 | 28 | 0.114 | 0.033 | 0.015 | 1.02 | 0.062 | 5.29 | 7 | 8.78 | 565 | 26.5 |
| 2/ 6/80 | 9.6 | 17 | 2.7 | L 4 | 1110 | 176 | 0.152 | 0.087 | 0.095 | 1 | 0.119 | 4.5 | 26 | 8.39 | 710 | 50.5 |
| 30/ 6/80 | 9.4 | 16 | 2.3 | L 4 | 700 | 104 | 0.067 | 0.017 | 0.02 | 0.8 | 0.042 | 2.8 | 6.5 | 8.26 | 730 | 57.5 |
| 15/ 7/80 | 13 | 26 | 1 | L 4 | 490 | 320 | 0.043 | 0.001 | 0.01 | 0.82 | 0.026 | 1.86 | 3.5 | 8.95 | 980 | 98.5 |
| 12/ 8/80 | 7.8 | 22 | 4.5 | 240 | G28000 | 2500 | 0.284 | 0.065 | 0.285 | 1.34 | 0.097 | 1.66 | 49.9 | 7.73 | 510 | 40.5 |
| 25/ 8/80 | 14.8 | 28.5 | 3 | L 4 | A 400 | A 10 | 0.086 | 0.005 | 0.005 | 0.98 | 0.022 | 1.5 | 8.3 | 8.75 | 1110 | 122 |
| 11/ 9/80 | 16.2 | 20.8 | 0.8 | L 4 | 260 | 92 | 0.04 | 0.005 | 0.015 | 0.7 | 0.014 | 4.2 | 2.1 | 8.61 | 1250 | 160 |
| 22/ 9/80 | - | - | 1.4 | L 4 | 280 | 332 | 0.072 | 0.005 | 0.01 | 0.88 | 0.025 | 4 | 9.7 | 8.68 | 1210 | 145 |
| 9/10/80 | G20 | 12 | 0.8 | L 4 | 110 | 110 | 0.032 | 0.002 | 0.01 | 0.84 | 0.33 | 4.4 | 2.3 | 8.41 | 1010 | 95 |
| 20/10/80 | G20 | 8.5 | 2.4 | 12 | 48 | 262 | 0.05 | 0.027 | 0.005 | 0.72 | 0.031 | 5.9 | 1.6 | 8.38 | 850 | 65 |
| 6/11/80 | 15.6 | 2.2 | 1.1 | 4 | 16 | 16 | 0.03 | 0.009 | 0.005 | 0.54 | 0.016 | 5.2 | 1.6 | 8.21 | 950 | 71.5 |
| 19/11/80 | 15 | 3.8 | 1 | L 4 | 72 | 12 | 0.096 | 0.076 | 0.015 | 0.56 | 0.048 | 6.8 | 1.8 | 8.48 | 1050 | 84 |
| 3/12/80 | 13.2 | -0.8 | 3.2 | L 4 | G 500 | G 500 | 0.19 | 0.079 | 0.175 | 1.42 | 0.058 | 12.9 | 38.2 | 8.02 | 650 | 33.5 |
| 18/12/80 | 15 | 0.2 | 0.9 | L 4 | 210 | 300 | 0.084 | 0.06 | 0.105 | 0.8 | 0.083 | 7.8 | 16.7 | 8.07 | 985 | 68.5 |
| MINIMUM | 7.8 | -0.8 | 0.8 | L 4 | 16 | 4 | 0.03 | 0.001 | 0.005 | 0.54 | 0.014 | 1.5 | 1.6 | 7.73 | 510 | 26.5 |
| GEO.MEAN | 13.9 | 9 | 1.7 | L 5 | 245 | 95 | 0.076 | 0.016 | 0.024 | 0.86 | 0.054 | 4.11 | 6.1 | 8.41 | 859 | 68.8 |
| ARI.MEAN | 14.4 | 13.1 | 1.9 | L 20 | 2161 | 324 | 0.094 | 0.032 | 0.058 | 0.89 | 0.094 | 4.91 | 11.8 | 8.41 | 888 | 77.9 |
| MAXIMUM | 20 | 28.5 | 4.5 | L240 | 28000 | 2500 | 0.284 | 0.087 | 0.285 | 1.42 | 0.43 | 12.9 | 49.9 | 8.95 | 1250 | 160 |
| ROUTINE MONITORING DATA FOR 1981 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12/ 1/81 | - | 0 | 0.5 | L 4 | 52 | 36 | 0.188 | 0.162 | 0.52 | 1.26 | 0.071 | 6.7 | 2.1 | 7.73 | 1050 | 88 |
| 21/ 1/81 | 9 | -0.5 | 1.2 | L 4 | 132 | 68 | 0.45 | 0.4 | 0.735 | 1.29 | 0.134 | 6.9 | 8.4 | 7.75 | 1160 | 108 |
| 25/ 2/81 | 12.6 | 0 | 2.4 | 4 | 1200 | 1700 | 0.134 | 0.062 | 0.195 | 1.34 | 0.05 | 6.4 | 24 | 7.85 | 772 | 20.5 |
| 4/ 3/81 | 12.2 | 2 | 0.7 | L 4 | 1300 | 220 | 0.086 | 0.063 | 0.655 | 1.5 | 0.042 | 6.3 | 5.2 | 8.05 | 690 | 40 |
| 19/ 3/81 | - | - | 1.2 | L 4 | A 20 | L 10 | 0.082 | 0.059 | 0.77 | 1.46 | 0.091 | 2.86 | 5.3 | 8.22 | 1110 | 148 |
| 31/ 3/81 | - | - | 3.3 | 16 | 830 | 348 | 0.238 | 0.073 | 0.28 | 1.72 | 0.132 | 6.9 | 47.2 | 7.96 | 570 | 29.5 |
| 14/ 4/81 | 10.8 | 10 | 5.4 | 80 | G1500 | G1500 | 0.3 | 0.184 | G1 | 2.15 | 0.141 | 3.99 | 36.6 | 7.88 | 630 | 49 |
| 27/ 4/81 | 15.8 | 10 | 3.3 | 8 | 1500 | 420 | 0.18 | 0.088 | 0.79 | 2.22 | 0.168 | 4.33 | 4.5 | 8.21 | 760 | 55 |
| 13/ 5/81 | 17 | 14.5 | 2.4 | L 4 | A 10 | A 20 | 0.084 | 0.024 | 0.085 | 1.12 | 0.13 | 5.1 | 4.5 | 8.61 | 690 | 42 |
| 9/ 6/81 | 13.4 | 24.2 | 2.4 | L 4 | 200 | 36 | 0.098 | 0.048 | 0.045 | 1.2 | 0.097 | 4.2 | 7.1 | 8.61 | 1020 | 104 |
| 6/ 7/81 | 12.3 | 29 | 2.4 | 4 | 300 | 196 | 0.104 | 0.03 | 0.03 | 1.24 | 0.056 | 5.3 | 7.9 | 8.52 | 860 | 80 |
| 4/ 8/81 | 14.2 | 27.5 | 1.5 | L 4 | 310 | A 80 | 0.054 | 0.015 | 0.035 | 0.92 | 0.027 | 2.67 | 5.7 | 8.59 | 1040 | 122 |
| MINIMUM | 9 | -0.5 | 0.5 | L 4 | 10 | 10 | 0.054 | 0.015 | 0.03 | 0.92 | 0.027 | 2.67 | 2.1 | 7.73 | 570 | 20.5 |
| GEO.MEAN | 12.8 | 12.8 | 1.8 | L 6 | 255 | 130 | 0.138 | 0.068 | 0.238 | 1.41 | 0.083 | 4.9 | 8.4 | 8.16 | 840 | 63 |
| ARI.MEAN | 13 | 11.7 | 2.2 | 12 | 613 | 386 | 0.167 | 0.101 | 0.428 | 1.45 | 0.095 | 5.14 | 13.2 | 8.17 | 863 | 73.8 |
| MAXIMUM | 17 | 29 | 5.4 | L80 | 1500 | 1700 | 0.45 | 0.4 | 1 | 2.22 | 0.168 | 6.9 | 47.2 | 8.61 | 1160 | 148 |

NOTES: L = LESS THAN, G = GREATER THAN, A = APPROXIMATELY.
MEANS ARE BASED ON RECORDED VALUES INCLUDING THOSE MARKED L,
G OR A. THEY MUST THEREFORE BE INTERPRETED WITH SOME CAUTION.

ROUTINE MONITORING DATA AT STATION 12, AVON RIVER, LOT 20, CONC. XII, DOWNIE TWP.

| DATE | D.O. | TEMP | BOD5 | PSEU. AERUG. | FECAL COL. | FECAL STREP. | TOT. PHO. | SOL. PHO. | FREE AMM. | TKN | NITRITE | NITRATE | SUS. SOL. | PH | COND. UMHOS /CM | CHLORIDE MG/L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MG/L | °C | MG/L | --- BACTERIA/100 ML --- | | | | | | MG/L | | | | UNITS | | |
| ROUTINE MONITORING DATA FOR 1980 | | | | | | | | | | | | | | | | |
| 7/ 5/80 | 13.6 | 9.9 | 1.1 | L 4 | 35 | 12 | 0.046 | 0.013 | 0.015 | 0.57 | 0.028 | 3.73 | 11.5 | 8.35 | 575 | 8.5 |
| 21/ 5/80 | 15.5 | 16.9 | 1.8 | L 4 | 128 | 28 | 0.086 | 0.032 | 0.02 | 0.98 | 0.056 | 5.53 | 6.5 | 8.75 | 565 | 26 |
| 2/ 6/80 | 9.7 | 18.5 | 2.7 | 4 | G 1500 | 220 | 0.137 | 0.081 | 0.07 | 0.92 | 0.114 | 5.7 | 20 | 8.45 | 690 | 47.5 |
| 30/ 6/80 | 10.5 | 18.2 | 2.1 | L 4 | 660 | 120 | 0.076 | 0.019 | 0.03 | 0.86 | 0.031 | 2.3 | 13 | 8.24 | 660 | 49 |
| 15/ 7/80 | 12.4 | 26.1 | 0.9 | L 4 | 270 | 190 | 0.045 | 0.005 | 0.02 | 0.8 | 0.014 | 1.1 | 2.4 | 9.17 | 930 | 99 |
| 12/ 8/80 | 7.7 | 21.2 | 4.5 | 160 | G24000 | 2300 | 0.264 | 0.057 | 0.2 | 1.28 | 0.085 | 1.79 | 42.1 | 7.75 | 540 | 42.5 |
| 25/ 8/80 | 16.5 | 29 | 1.3 | L 4 | L 100 | A 20 | 0.044 | 0.004 | 0.02 | 0.78 | 0.01 | 0.57 | 3.4 | 9.46 | 990 | 99.5 |
| 22/ 9/80 | - | - | 0.9 | 4 | 100 | G 600 | 0.036 | 0.002 | 0.01 | 0.96 | 0.019 | 3.2 | 2.5 | 9.09 | 1090 | 132 |
| 9/10/80 | G20 | 13 | 1.6 | L 4 | A 70 | G1500 | 0.03 | 0.001 | 0.025 | 1.2 | 0.32 | 4.4 | 3.1 | 8.43 | 1030 | 118 |
| 20/10/80 | G20 | 8 | 1.6 | L 4 | 40 | 104 | 0.05 | 0.028 | 0.005 | 0.72 | 0.024 | 6.4 | 0.5 | 8.54 | 815 | 57 |
| 6/11/80 | 15.4 | 2.2 | 0.7 | L 4 | 32 | 52 | 0.028 | 0.008 | 0.005 | 0.55 | 0.016 | 5.38 | 1.5 | 8.29 | 920 | 68 |
| 19/11/80 | 16.2 | 2.2 | 1 | L 4 | L 4 | L 4 | 0.074 | 0.04 | 0.015 | 0.51 | 0.044 | 6.4 | 1.9 | 8.41 | 1020 | 76.5 |
| 3/12/80 | 15.4 | -0.5 | 2.7 | L 4 | G 600 | G 500 | 0.186 | 0.09 | 0.165 | 1.4 | 0.053 | 14 | 31.4 | 8.05 | 545 | 31.5 |
| 18/12/80 | 12.4 | 0 | 1.3 | L 4 | A 50 | 200 | 0.082 | 0.058 | 0.14 | 0.86 | 0.087 | 7.5 | 15 | 8.22 | 975 | 57.5 |
| MINIMUM | 7.7 | -0.5 | 0.7 | L 4 | 4 | 4 | 0.028 | 0.001 | 0.005 | 0.51 | 0.01 | 0.57 | 0.5 | 7.75 | 540 | 8.5 |
| GEO.MEAN | 13.8 | 11.5 | 1.5 | L 5 | 151 | 123 | 0.067 | 0.016 | 0.027 | 0.85 | 0.04 | 3.72 | 5.7 | 8.5 | 794 | 54.6 |
| ARI.MEAN | 14.3 | 12.7 | 1.7 | 15 | G 1971 | 425 | 0.085 | 0.031 | 0.053 | 0.89 | 0.064 | 4.86 | 11.1 | 8.51 | 818 | 65.9 |
| MAXIMUM | 20 | 29 | 4.5 | L160 | 24000 | 2300 | 0.264 | 0.081 | 0.2 | 1.4 | 0.32 | 14 | 42.1 | 9.46 | 1090 | 132 |
| ROUTINE MONITORING DATA FOR 1981 | | | | | | | | | | | | | | | | |
| 12/ 1/81 | - | 0 | 0.5 | L 4 | 32 | 144 | 0.18 | 0.163 | 0.625 | 1.22 | 0.069 | 6.8 | 2 | 7.68 | 1070 | 90 |
| 21/ 1/81 | 9.8 | 0 | 1.3 | L 4 | 124 | 72 | 0.375 | 0.35 | 0.915 | 1.37 | 0.082 | 6.37 | 1.1 | 7.73 | 1140 | 108 |
| 25/ 2/81 | 12.6 | 0 | 2.4 | 4 | 1200 | 2100 | 0.136 | 0.062 | 0.185 | 1.38 | 0.048 | 6.6 | 25 | 7.86 | 466 | 20 |
| 4/ 3/81 | 10.4 | 2 | 1.3 | L 4 | 1300 | 230 | 0.086 | 0.06 | 0.57 | 1.36 | 0.043 | 6.9 | 5.1 | 8.06 | 670 | 38.5 |
| 19/ 3/81 | - | - | 1.4 | L 4 | L 10 | A 20 | 0.074 | 0.051 | 0.635 | 1.32 | 0.092 | 6.06 | 3.7 | 8.23 | 1110 | 152 |
| 31/ 3/81 | - | - | 2.7 | 24 | 870 | 620 | 0.186 | 0.073 | 0.225 | 1.26 | 0.115 | 7.4 | 35.4 | 8.05 | 570 | 27.5 |
| 14/ 4/81 | 10.8 | 9 | 5.8 | 32 | G1500 | G1500 | 0.315 | 0.185 | G1 | 2.35 | 0.149 | 5 | 33.7 | 7.93 | 670 | 50 |
| 27/ 4/81 | 16.2 | 9.5 | 2.1 | 12 | 1480 | A 70 | 0.15 | 0.067 | 0.51 | 1.86 | 0.152 | 4.9 | 3.4 | 8.34 | 755 | 51.5 |
| 13/ 5/81 | 17.6 | 15 | 2.5 | L 4 | A 50 | 4 | 0.066 | 0.019 | 0.05 | 1.02 | 0.121 | 5.3 | 5.4 | 8.53 | 675 | 42.5 |
| 9/ 6/81 | 15.8 | 25.1 | 1.8 | L 4 | 48 | 40 | 0.072 | 0.037 | 0.025 | 1 | 0.06 | 3.3 | 6 | 8.72 | 955 | 97.5 |
| 6/ 7/81 | 13.8 | 29.5 | 2.2 | L 4 | 204 | 248 | 0.108 | 0.033 | 0.03 | 1.22 | 0.043 | 5.2 | 10.4 | 8.67 | 850 | 82 |
| 4/ 8/81 | 14.4 | 28 | 1.2 | L 4 | 180 | 140 | 0.058 | 0.008 | 0.035 | 0.94 | 0.016 | 2.13 | 10.2 | 8.76 | 980 | 112 |
| MINIMUM | 9.8 | 0 | 0.5 | L 4 | 10 | 4 | 0.058 | 0.008 | 0.025 | 0.94 | 0.016 | 2.13 | 1.1 | 7.68 | 466 | 20 |
| GEO.MEAN | 13.2 | 12.7 | 1.8 | L 6 | 216 | 135 | 0.126 | 0.059 | 0.206 | 1.31 | 0.07 | 5.23 | 7 | 8.21 | 797 | 61.7 |
| ARI.MEAN | 13.5 | 11.8 | 2.1 | 9 | 583 | 432 | 0.151 | 0.092 | 0.4 | 1.36 | 0.083 | 5.5 | 11.8 | 8.22 | 826 | 72.6 |
| MAXIMUM | 17.6 | 29.5 | 5.8 | L32 | 1500 | 2100 | 0.375 | 0.35 | 1 | 2.35 | 0.152 | 7.4 | 35.4 | 8.76 | 1140 | 152 |

NOTES: L = LESS THAN, G = GREATER THAN, A = APPROXIMATELY.
MEANS ARE BASED ON RECORDED VALUES INCLUDING THOSE MARKED L,
G OR A. THEY MUST THEREFORE BE INTERPRETED WITH SOME CAUTION.

ROUTINE MONITORING DATA AT STATION 13, AVON RIVER, LOT 5, N. BOUNDARY CONC., DOWNIE TWP.

| DATE | D.O. MG/L | TEMP OC | BOD5 MG/L | PSEU. AERUG. | FECAL COL. | FECAL STREP. | TOT. PHO. | SOL. PHO. | FREE AMM. | TKN | NIT-RITE | NIT-RATE | SUS. SOL. | PH UNITS | COND. UMHOS /CM | CHLOR-IDE MG/L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | --- BACTERIA/100 ML --- | | | ---------- MG/L ---------- | | | | | | | | | |
| ROUTINE MONITORING DATA FOR 1980 | | | | | | | | | | | | | | | | |
| 21/ 5/80 | 12.2 | 15 | 1.5 | L 4 | 150 | 28 | 0.086 | 0.032 | 0.015 | 1.02 | 0.049 | 5.55 | 7.5 | 8.8 | 565 | 26.5 |
| 2/ 6/80 | 9.8 | 19 | 2 | L 4 | G 1500 | 152 | 0.125 | 0.063 | 0.04 | 0.96 | 0.106 | 6.2 | 14.5 | 8.57 | 700 | 48.5 |
| 30/ 6/80 | 9.9 | 17.2 | 2.4 | L 4 | 450 | 196 | 0.075 | 0.012 | 0.05 | 0.92 | 0.023 | 1.91 | 10.5 | 8.32 | 640 | 48.5 |
| 15/ 7/80 | 10.4 | 27.5 | 0.7 | L 4 | 230 | 180 | 0.061 | 0.021 | 0.02 | 0.8 | 0.008 | 0.5 | 3.3 | 9.36 | 930 | 121 |
| 12/ 8/80 | 7.9 | 21.5 | 6.2 | 72 | 11100 | 2000 | 0.334 | 0.064 | 0.125 | 1.6 | 0.082 | 1.7 | 101 | 7.83 | 510 | 50 |
| 25/ 8/80 | 11.7 | 29.7 | 1.4 | 4 | A 200 | A 20 | 0.06 | 0.013 | 0.03 | 0.8 | 0.005 | 0.25 | 11.2 | 9.2 | 1040 | 128 |
| 11/ 9/80 | - | - | 0.6 | L 4 | A 40 | 104 | 0.013 | 0.003 | 0.01 | 0.85 | 0.008 | 2.29 | L 0.1 | 8.8 | 1120 | 155 |
| 22/ 9/80 | - | - | 0.8 | L 4 | A 20 | 344 | 0.026 | 0.001 | L0.005 | 0.78 | 0.01 | 1.9 | 3.2 | 9.1 | 1020 | 128 |
| 9/10/80 | G20 | 13 | 1.6 | L 4 | 16 | A 80 | 0.024 | 0.001 | 0.025 | 0.84 | 0.056 | 4.2 | 2.5 | 8.69 | 940 | 109 |
| 20/10/80 | G20 | 8.5 | 1.5 | L 4 | 32 | G 600 | 0.022 | 0.003 | 0.005 | 0.7 | 0.017 | 6.1 | 4.5 | 8.27 | 745 | 48 |
| 6/11/80 | 15.2 | 2 | 1.1 | L 4 | 8 | A 60 | 0.018 | 0.001 | 0.005 | 0.6 | 0.012 | 5.7 | 1.6 | 8.32 | 975 | 60 |
| 19/11/80 | 15.8 | 3 | 0.9 | L 4 | 4 | L 4 | 0.033 | 0.021 | 0.01 | 0.46 | 0.066 | 6.2 | 2.3 | 8.39 | 1010 | 81 |
| 18/12/80 | 15.4 | 0.3 | 1 | L 4 | 68 | 235 | 0.078 | 0.055 | 0.415 | 1.1 | 0.165 | 7.6 | 7 | 8.09 | 1000 | 71 |
| MINIMUM | 7.9 | 0.3 | 0.6 | L 4 | 4 | 4 | 0.013 | 0.001 | 0.005 | 0.46 | 0.005 | 0.25 | 0.1 | 7.83 | 565 | 26.5 |
| GEO.MEAN | 12.9 | 8.5 | 1.4 | L 5 | G 94 | 115 | 0.048 | 0.009 | 0.022 | 0.84 | 0.027 | 2.71 | 4.6 | 8.58 | 848 | 73.2 |
| ARI.MEAN | 13.5 | 14.2 | 1.7 | L 9 | 1063 | 308 | 0.073 | 0.022 | 0.058 | 0.88 | 0.047 | 3.85 | 13 | 8.6 | 869 | 82.7 |
| MAXIMUM | 20 | 29.7 | 6.2 | L72 | 11100 | 2000 | 0.334 | 0.064 | 0.415 | 1.6 | 0.165 | 7.6 | 101 | 9.36 | 1120 | 155 |
| ROUTINE MONITORING DATA FOR 1981 | | | | | | | | | | | | | | | | |
| 12/ 1/81 | - | 0 | 0.5 | L 4 | 20 | 40 | 0.178 | 0.161 | 0.72 | 1.42 | 0.054 | 7.4 | 0.7 | 7.71 | 1130 | 112 |
| 21/ 1/81 | 9.8 | 0 | 1 | L 4 | 136 | 20 | 0.335 | 0.31 | 1.28 | 1.67 | 0.033 | 5.92 | 1.1 | 7.68 | 1140 | 100 |
| 12/ 2/81 | 11.8 | 1.3 | 3.6 | 12 | G 500 | G 500 | 0.325 | 0.23 | 1.4 | 2.05 | 0.047 | 3.8 | 7.2 | 7.61 | 1130 | 210 |
| 17/ 2/81 | 11.8 | 2 | 4.6 | 16 | G19500 | 10300 | 0.36 | 0.225 | 1.7 | 3.1 | 0.04 | 3.95 | 35 | 7.56 | 970 | 155 |
| 25/ 2/81 | 12.6 | 0 | 2.1 | 8 | 1400 | 4600 | 0.138 | 0.065 | 0.175 | 1.36 | 0.047 | 7.1 | 23.6 | 7.92 | 464 | 20 |
| 4/ 3/81 | 12.2 | 2 | 0.6 | L 4 | 1700 | 250 | 0.082 | 0.06 | 0.565 | 1.42 | 0.042 | 6.9 | 5.8 | 8.11 | 690 | 39.5 |
| 19/ 3/81 | - | - | 1.1 | L 4 | L 10 | A 20 | 0.068 | 0.049 | 0.475 | 1.22 | 0.085 | 6.16 | 2.9 | 8.33 | 990 | 110 |
| 31/ 3/81 | - | - | 3.3 | 8 | 400 | 370 | 0.182 | 0.067 | 0.2 | 1.54 | 0.11 | 7.1 | 41.3 | 8.11 | 550 | 27.5 |
| 14/ 4/81 | 11.6 | 10 | 6.6 | 52 | G 1500 | 1360 | 0.355 | 0.205 | G1 | 3.3 | 0.195 | 6 | 33.7 | 8.01 | 780 | 57.5 |
| 27/ 4/81 | 15.8 | 9.5 | 2.2 | L 4 | 670 | A 30 | 0.124 | 0.049 | 0.24 | 1.56 | 0.14 | 5.06 | 4.9 | 8.33 | 740 | 48 |
| 13/ 5/81 | 16.6 | 15.3 | 2.1 | L 4 | A 30 | 16 | 0.054 | 0.009 | 0.015 | 0.96 | 0.103 | 5.3 | 5.7 | 8.47 | 655 | 44 |
| 9/ 6/81 | 14.4 | 24.9 | 1.9 | L 4 | 112 | 64 | 0.064 | 0.013 | 0.02 | 1.06 | 0.028 | 2.5 | 4.7 | 8.77 | 915 | 97.5 |
| 6/ 7/81 | 11.9 | 30.7 | 1.8 | L 4 | 350 | 272 | 0.106 | 0.026 | 0.025 | 1.44 | 0.034 | 4.9 | 9.6 | 8.66 | 880 | 92 |
| 4/ 8/81 | 14.2 | 27.5 | 1.5 | L 4 | 690 | 1400 | 0.086 | 0.018 | 0.045 | 1 | 0.007 | 1.23 | 9.5 | 8.94 | 875 | 112 |
| MINIMUM | 9.8 | 0 | 0.5 | L 4 | 10 | 16 | 0.054 | 0.009 | 0.015 | 0.96 | 0.007 | 1.23 | 0.7 | 7.56 | 464 | 20 |
| GEO.MEAN | 12.8 | 8.2 | 1.9 | L 6 | 337 | 221 | 0.142 | 0.064 | 0.236 | 1.54 | 0.053 | 4.79 | 7.3 | 8.15 | 823 | 73.1 |
| ARI.MEAN | 13 | 10.3 | 2.4 | 9 | G 1937 | G 1382 | 0.176 | 0.106 | 0.561 | 1.65 | 0.07 | 5.23 | 13.3 | 8.16 | 851 | 88.2 |
| MAXIMUM | 16.6 | 30.7 | 6.6 | 52 | G19500 | 10300 | 0.36 | 0.31 | 1.7 | 3.3 | 0.195 | 7.4 | 41.3 | 8.94 | 1140 | 210 |

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MEANS ARE BASED ON RECORDED VALUES INCLUDING THOSE MARKED L, G OR A. THEY MUST THEREFORE BE INTERPRETED WITH SOME CAUTION.

## APPENDIX B: Heavy Metal Concentrations at Sampling Locations on the Avon River - 1981.

| | UNFILTERED | | | | | | | FILTERED | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DATE | Al | Cd | Cr | Pb | Ni | Cu | Zn | Al | Cd | Cr | Pb | Ni | Cu | Zn |
| | | | STATION 3 | | | | | | | | | | | |
| -- | .29* | L.01 | L.01 | L.01 | L.01 | L.01 | .009* | | | | | | | |
| 12/11/81 | .6 | .0006 | .3 | L.0005 | .042 | .059 | L.03 | | | | | | | |
| 18/11/81 | .1 | L.0002 | L.1 | L.005 | L.025 | .010 | L.03 | L.1 | L.0002 | L.1 | L.005 | L.025 | .010 | L.03 |
| 24/11/81 | .2 | L.0002 | L.1 | L.005 | L.025 | .010 | L.03 | .1 | L.0002 | L.1 | L.005 | L.025 | .012 | L.03 |
| 02/12/81 | 3.2 | L.001 | L.01 | L.01 | L.02 | .01 | .026 | .8 | .0003 | L.1 | L.005 | L.025 | .012 | L.03 |
| 09/12/81 | .3 | .0002 | L.01 | L.005 | L.025 | .023 | L.03 | L.1 | .0002 | L.1 | L.005 | L.025 | .017 | L.03 |
| MIN | .1 | L.002 | L.01 | L.0005 | L.01 | L.01 | .009 | L.1 | L.0002 | L.1 | L.005 | L.025 | .010 | L.03 |
| MAX | 3.2 | L.01 | .3 | L.01 | .042 | .059 | L.03 | .8 | .0003 | L.1 | L.005 | L.025 | .017 | L.03 |
| AVE | .71 | L.002 | L.088 | L.006 | L.024 | L.020 | L.026 | L.28 | L.0002 | L.1 | L.005 | L.025 | .013 | L.03 |
| | | | STATION 6 | | | | | | | | | | | |
| -- | 0.78* | .0005 | .014 | L.003 | .004 | .006 | .112* | | | | | | | |
| 12/11/81 | 0.4 | .0006 | .2 | .013 | L.025 | .015 | .05 | | | | | | | |
| 18/11/81 | 0.3 | L.0002 | L.1 | L.005 | L.025 | .010 | .05 | L.1 | L.0002 | L.1 | L.005 | L.025 | .010 | .03 |
| 24/11/81 | 0.4 | L.0002 | L.1 | L.005 | L.025 | .010 | L.03 | L.1 | L.0002 | L.1 | L.005 | L.025 | .008 | L.03 |
| 02/12/81 | 1.7 | L.001 | L.01 | L.010 | L.01 | .01 | .071 | .3 | L.0002 | L.1 | L.005 | L.025 | .013 | .03 |
| 09/12/81 | 0.3 | L.0002 | L.01 | L.005 | L.025 | .014 | .05 | L.1 | L.0002 | L.1 | L.005 | L.025 | .015 | L.03 |
| MIN | 0.3 | .0002 | .01 | .003 | .004 | .006 | .03 | .1 | L.0002 | L.1 | L.005 | L.025 | .008 | L.03 |
| MAX | 1.7 | L.001 | 0.2 | .013 | L.025 | .015 | .112 | .3 | L.0002 | L.1 | L.005 | L.025 | .015 | .03 |
| AVE | .666 | L.0004 | L.072 | L.007 | L.019 | L.011 | L.068 | L.15 | L.0002 | L.1 | L.005 | L.025 | .012 | L.03 |
| | | | STATION STP | | | | | | | | | | | |
| -- | .52* | L.01 | L.01 | L.01 | L.01 | L.01 | .075* | | | | | | | |
| 12/11/81 | .2 | .0017 | L.1 | L.005 | L.025 | .015 | .04 | | | | | | | |
| 18/11/81 | .2 | L.0002 | L.1 | L.005 | L.025 | .014 | .04 | .1 | L.0002 | L.1 | L.005 | L.025 | .010 | .05 |
| 24/11/81 | .2 | L.0002 | L.1 | L.005 | L.025 | .010 | .10 | .1 | L.0002 | L.1 | L.005 | L.025 | .010 | .10 |
| 02/12/81 | .3 | L.0002 | L.1 | L.005 | L.025 | .015 | .05 | .1 | L.0002 | L.1 | L.005 | L.025 | .016 | .04 |
| 09/12/81 | .3 | L.0002 | L.1 | L.005 | L.025 | .014 | .03 | .1 | L.0002 | L.1 | L.005 | L.025 | .022 | .04 |
| MIN | 0.2 | L.0002 | L.01 | L.005 | L.01 | L.01 | .03 | .1 | L.0002 | L.1 | L.005 | L.025 | .010 | .04 |
| MAX | 0.52 | L.01 | .1 | L.01 | L.025 | .015 | .10 | .1 | L.0002 | L.1 | L.005 | L.025 | .022 | .10 |
| AVE | 0.32 | L.002 | L.085 | L.006 | L.022 | L.013 | .059 | .1 | L.0002 | L.1 | L.005 | L.025 | .014 | .058 |

* ave. of 2 data points

APPENDIX B (cont'd)

| | UNFILTERED | | | | | | | FILTERED | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DATE | Al | Cd | Cr | Pb | Ni | Cu | Zn | Al | Cd | Cr | Pb | Ni | Cu | Zn |
| | | | | STATION 7 | | | | | | | | | | |
| -- | .25* | L.01 | L.01 | L.01 | L.01 | L.01 | .044* | | | | | | | |
| 12/11/81 | .2 | .0008 | L.1 | L.005 | L.025 | .011 | .03 | | | | | | | |
| 18/11/81 | .2 | L.0002 | L.1 | L.005 | L.025 | .013 | .04 | .1 | L.0002 | L.1 | L.005 | L.025 | .010 | .04 |
| 24/11/81 | .3 | L.0002 | L.1 | L.005 | L.025 | .009 | .04 | .1 | L.0002 | L.1 | L.005 | L.025 | .010 | .04 |
| 02/12/81 | .9 | L.001 | L.01 | L.01 | L.01 | .02 | .052 | .2 | L.0002 | L.1 | L.005 | L.025 | .013 | .03 |
| 09/12/81 | .3 | L.0002 | L.01 | L.005 | L.025 | L.017 | .03 | L.1 | L.0002 | L.1 | L.005 | L.025 | .017 | L.03 |
| MIN | .2 | .0002 | .01 | .005 | .01 | .009 | .03 | .1 | .0002 | L.1 | L.005 | .025 | .010 | L.03 |
| MAX | .9 | L.01 | L.1 | L.01 | L.025 | .02 | .052 | .2 | L.0002 | L.1 | L.005 | L.025 | .017 | .04 |
| AVE | .343 | L.0021 | L.055 | L.007 | L.02 | L.013 | .04 | L.125 | L.0002 | L.1 | L.005 | L.025 | .012 | L.035 |
| | | | | STATION 10 | | | | | | | | | | |
| -- | .53* | .0004 | .014 | L.003 | .004 | .008 | .046* | | | | | | | |
| 12/11/81 | L.1 | .0004 | L.1 | L.005 | .025 | .010 | L.03 | | | | | | | |
| 18/11/81 | .1 | L.0002 | L.1 | L.005 | L.025 | .013 | L.03 | L.1 | L.0002 | L.1 | L.005 | L.025 | .010 | L.03 |
| 24/11/81 | .3 | L.0002 | L.1 | L.005 | L.025 | .009 | L.03 | .2 | L.0002 | L.1 | L.005 | L.025 | .010 | L.034 |
| 02/12/81 | .8 | L.001 | L.01 | L.01 | L.01 | .03 | .054 | .2 | L.0002 | L.1 | L.005 | L.025 | .016 | L.03 |
| 09/12/81 | .2 | L.0002 | L.1 | L.005 | L.025 | .016 | L.03 | L.1 | L.0002 | L.1 | L.005 | L.025 | .014 | L.03 |
| MIN | L.1 | L.0002 | L.01 | L.003 | L.004 | .008 | L.03 | L.1 | L.0002 | L.1 | L.005 | L.025 | .010 | L.03 |
| MAX | .53 | .001 | L.1 | L.01 | .025 | .03 | .054 | .2 | L.0002 | L.1 | L.005 | L.025 | .016 | L.03 |
| AVE | L.366 | L.0004 | L.071 | L.006 | L.019 | .014 | L.03 | L.15 | L.0002 | L.1 | L.005 | L.025 | .012 | L.03 |

* ave of 2 data points

APPENDIX C: Mean Pesticide Concentrations at Sampling Locations on the Avon River

| Sampling Station | 1A | 1D | 3 | 7 | 13 |
|---|---|---|---|---|---|
| Parameter: | | sample size/ppb | | | |
| Atrazine | 9/ 0.9 | 9/ 0.3 | 9/ 1.2 | 10/ 0.6 | 10/ 0.9 |
| D. Atrazine | 9/ 0.5 | 7/ 0.3 | 6/ 0.5 | 9/ 0.3 | 10/ 0.4 |
| other Triazines | 9/ ND | 9/ ND | 9/ ND | 9/ ND | 9/ ND |
| Simazine | 2/ ND | 2/ ND | 2/ 0.14 | 2/ 0.11 | 2/ ND |
| D. Simazine | 1/ ND | 1/ ND | 1/ ND | 1/ ND | 1/ ND |
| Organo phosphates | 8/ ND | 8/ ND | 8/ ND | 8/ ND | 8/ ND |
| Organo chlorides | 5/ ND | 5/ ND | 5/ ND | 5/ ND | 5/ ND |
| P.C.B. | 8/ 0.006 | 8/ 0.002 | 8/ 0.002 | 8/ 0.006 | 8/ 0.008 |
| Heptachlor Epoxide | 3/ ND | 3/ 0.0003 | 3/ 0.0003 | 3/ 0.003 | 3/ 0.007 |
| Endosulphan | 3/ ND | 3/ ND | 3/ ND | 3/ 0.031 | 3/ 0.003 |
| Dicamba | 5/ L0.1 | 5/ L0.1 | 5/ L0.1 | 5/ L0.1 | 5/ L0.1 |
| Mecoprop | 5/ ND | 5/ ND | 5/ 0.26 | 5/ ND | 5/ ND |
| MCPA | 5/ ND | 5/ ND | 5/ ND | 5/ 0.12 | 5/ ND |
| Dichloroprop | 5/ ND | 5/ ND | 5/ ND | 5/ 0.04 | 5/ 0.04 |
| 24D | 5/ ND | 5/ 0.06 | 5/ 0.08 | 5/ 0.16 | 5/ 0.18 |
| Silvex | 5/ ND | 5/ ND | 5/ ND | 5/ ND | 5/ ND |
| 245-T | 5/ ND | 5/ ND | 5/ ND | 5/ ND | 5/ ND |
| MCPB | 5/ ND | 5/ ND | 5/ ND | 5/ ND | 5/ ND |
| 24DB | 5/ ND | 5/ ND | 5/ ND | 5/ ND | 5/ ND |
| DDE | 1/ 0.010 | 1/ ND | 1/ ND | 1/ 0.00 | 1/ ND |
| P.P. DDT | 1/ 0.062 | 1/ ND | 1/ ND | 1/ 0.005 | 1/ ND |
| O.P. DDT | 1/ ND | 1/ ND | 1/ ND | 1/ ND | 1/ ND |
| Cyanazine | 2/ 0.6 | 2/ 0.8 | 2/ 0.5 | 2/ 0.8 | 2/ 1.4 |

ND = not dectectable

# STRATFORD-AVON RIVER ENVIRONMENTAL MANAGEMENT PROJECT
## LIST OF TECHNICAL REPORTS

| | |
|---|---|
| S-1 | Impact of Stratford City Impoundments on Water Quality in the Avon River |
| S-2 | Physical Characteristics of the Avon River |
| S-3 | Water Quality Monitoring of the Avon River - 1980, 1981 |
| S-4 | Experimental Efforts to Inject Pure Oxygen into the Avon River |
| S-5 | Experimental Efforts to Aerate the Avon River with Small Instream Dams |
| S-6 | Growth of Aquatic Plants in the Avon River |
| S-7 | Alternative Methods of Reducing Aquatic Plant Growth in the Avon River |
| S-8 | Dispersion of the Stratford Sewage Treatment Plant Effluent into the Avon River |
| S-9 | Avon River Instream Water Quality Modelling |
| S-10 | Fisheries of the Avon River |
| S-11 | Comparison of Avon River Water Quality During Wet and Dry Weather Conditions |
| S-12 | Phosphorus Bioavailability of the Avon River |
| S-13 | A Feasibility Study for Augmenting Avon River Flow by Ground Water |
| S-14 | Experiments to Control Aquatic Plant Growth by Shading |
| S-15 | Design of an Arboreal Shade Project to Control Aquatic Plant Growth |

| | |
|---|---|
| U-1 | Urban Pollution Control Strategy for Stratford, Ontario - An Overview |
| U-2 | Inflow/Infiltration Isolation Analysis |
| U-3 | Characterization of Urban Dry Weather Loadings |
| U-4 | Advanced Phosphorus Control at the Stratford WPCP |
| U-5 | Municipal Experience in Inflow Control Through Removal of Household Roof Leaders |
| U-6 | Analysis and Control of Wet Weather Sanitary Flows |
| U-7 | Characterization and Control of Urban Runoff |
| U-8 | Analysis of Disinfection Alternatives |

| | |
|---|---|
| R-1 | Agricultural Impacts on the Avon River - An Overview |
| R-2 | Earth Berms and Drop Inlet Structures |
| R-3 | Demonstration of Improved Livestock and Manure Management Techniques in a Swine operation |
| R-4 | Identification of Priority Management Areas in the Avon River |
| R-5 | Occurrence and Control of Soil Erosion and Fluvial Sedimentation in Selected Basins of the Thames River Watershed |
| R-6 | Open Drain Improvement |
| R-7 | Grassed Waterway Demonstration Projects |
| R-8 | The Controlled Access of Livestock to Open Water Courses |
| R-9 | Physical Characteristics and Land Uses of the Avon River Drainage Basin |
| R-10 | Stripcropping Demonstration Project |
| R-11 | Water Quality Monitoring of Agricultural Diffuse Sources |
| R-12 | Comparative Tillage Trials |
| R-13 | Sediment Basin Demonstration Project |
| R-14 | Evaluation of Tillage Demonstration Using Sediment Traps |
| R-15 | Statistical Modelling of Instream Phosphorus |
| R-16 | Gully Erosion Control Demonstration Project |
| R-17 | Institutional Framework for the Control of Diffuse Agricultural Sources of Water Pollution |
| R-18 | Cropping-Income Impacts of Management Measures to Control Soil Loss |
| R-19 | An Intensive Water Quality Survey of Stream Cattle Access Sites |

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